

DOCUMENT RESUME

ED 157 682

SE 022 841

AUTHOR Tully, Randolph R., Jr., Ed.
 TITLE A Curriculum Activities Guide to Interdisciplinary Environmental Studies.
 INSTITUTION Project KARE, Blue Bell, Pa.
 SPONS AGENCY Office of Education (DHEW), Washington, D.C.
 PUB DATE 76
 GRANT OEG-71-1775
 NOTE 195p.; For related documents, see SE 022 840-842
 AVAILABLE FROM Project KARE, Colony Office Bldg., Route 73 & Butler Pike, Blue Bell, Pa. 19422 (no price quoted)
 EDRS PRICE MF-\$0.83 HC-\$10.03 Plus Postage.
 DESCRIPTORS Curriculum Guides; *Elementary Secondary Education; *Environmental Education; *Instructional Materials; *Interdisciplinary Approach; *Learning Activities; Natural Resources; Resource Materials; Science Education; *Teacher Developed Materials
 IDENTIFIERS Project KARE

ABSTRACT

This guide contains a variety of interdisciplinary learning activities in environmental education. It was developed by teachers and intended for use in elementary or junior high school programs. The contents are divided into six sections according to subject: (1) Art and Sensitivity; (2) Language Arts; (3) Mathematics; (4) History; (5) Social Studies; and (6) Science. Each activity includes introduction, equipment list, procedure, and questions. There are over 80 activities total and each content subject has activities that are related to other subject areas by topic. An appendix explains the development work done in writing this guide.
 (MA)

 * Reproductions supplied by EDRS are the best that can be made *
 * from the original document. *

ED157682



A CURRICULUM ACTIVITIES GUIDE

Project **KARE**

A National Model for
Strengthening Environmental
Studies in Local Schools

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

June Katucki

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC) AND
USERS OF THE ERIC SYSTEM."

To INTERDISCIPLINARY ENVIRONMENTAL STUDIES

SE 022 841

SCOPE OF INTEREST NOTICE

The ERIC Facility has assigned
this document for processing
to:

SE

SO

In our judgement, this document
is also of interest to the clearing-
houses noted to the right. Index-
ing should reflect their special
points of view.

**A CURRICULUM
ACTIVITIES GUIDE
TO
INTERDISCIPLINARY
ENVIRONMENTAL
STUDIES**

Edited by
RANDOLPH R. TULLY, JR.
ENVIRONMENTAL SPECIALIST
PROJECT KARE

**PROJECT KARE
MONTGOMERY COUNTY INTERMEDIATE UNIT
COLONY OFFICE BUILDING
RT. 73 & BUTLER PIKE
BLUE BELL, PA. 19422
(215) 643-7600**

**PROJECT KARE STAFF:
MATTHEW M. HICKEY, DIRECTOR
ALAN D. SEXTON, ASSISTANT DIRECTOR
RANDOLPH R. TULLY, ENVIRONMENTAL SPEC.
JANET A. HYLAND, ADMINISTRATIVE ASST.**

The project presented or reported herein was performed pursuant to a Grant from the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

The materials in this book were written and compiled during 1975 under the grant No. OEG-71-1775 from the Department of Health, Education, and Welfare, Office of Education, Washington, D. C. 20202.

Information concerning this publication may be obtained from:

Project KARE
Colony Office Building
Route 73 & Butler Pike
Blue Bell, Pennsylvania 19422

FIRST PRINTING 1976

Copyright Information:

This book has purposefully not been copyrighted. If, however, you should desire to reprint or copy portions, we would greatly appreciate acknowledgement.

This document is printed on 100% recycled paper.

PREFACE

During the spring and summer of 1975, Project KARE staff taught five environmental studies courses. These were variously sponsored by the Intermediate Unit In-Service Councils of Chester County and Montgomery County, Pennsylvania. The three courses represented by materials included here were "Environmental Studies For Elementary School Teachers" (Chester County), "Interdisciplinary Environmental Studies" (Chester County), and "Interdisciplinary Environmental Studies" (Montgomery County). Teachers attending one or more of these courses were required to submit several activities dealing with environmental conditions. It is the intent of those teachers to include them with their on-going curricula.

The activities in this book are a compilation of some of their first draft attempts at writing environmental studies activities. A few of the suggestions made by the instructors appear with the activities, printed in upper case letters. It is suggested that you consider these activities as a starting point for your own attempts at designing approaches specifically applicable to your own students.

In the appendix, you will find a descriptor of the USOE National Diffusion Network (and Project KARE's role in it) and instructions for writing activities (as given to the participants). Additionally, one of the course sessions generated a list of "Activity Suggestions For Studying An Urban Block". These are also included.

ACKNOWLEDGEMENTS

We are grateful to Mr. Stanley K. Landis, Executive Director, Chester County Intermediate Unit #24, and to Dr. Dennis Harken, Executive Director, Montgomery County Intermediate Unit #23, for making the expertise of their staffs available to us during the planning and conducting phases of this course. Dr. Wilbur V. Reese, Chester County Intermediate Unit, and Mr. Louis A. Krug, Montgomery County Intermediate Unit, very ably represented their respective Intermediate Units and worked in liaison with their In-Service Councils for approval of these courses.

Thanks go to Mr. James F. Bologa, Principal of the Chester County Child Development Center, and to Francis J. Gilronan, Principal of the Upper Dublin Senior High School for cordially extending us the use of their buildings and grounds.

We would also like to thank the Montgomery County Science Teachers Association, the Montgomery County Social Studies Teachers Group, and Dr. Donald L. Wright, of the Montgomery County Intermediate Unit for their special efforts in the initial development of the ideas for these courses.

The typing skills and perseverance of Mrs. Bette Pasquarello greatly aided the editor in the preparation of this book.

COURSE PARTICIPANTS

Claudia Arnold
John T. Bogdan
N. Christine Bowen
Carol Brown
Maryrose Casselberry
Sister Anne Elise Darreff
Mary S. DeCozio
Sister Paula Deufel
Marjorie A. Dillon
Patricia Eckfeldt
Marianne T. Essl
Dottie Frey
G. Beatrice Frey
Cheryl Hood
Dennis J. Huston
Elizabeth S. Ingram
Dan Jaycox
Charles Kaufman
Elizabeth J. Kilkullen
Edward Klavon
Elizabeth Anna Lutz
Betty Malloy
A. Virginia McDermott
Sister Rose Cecelia Molloy
Jeff Murr
Sister Maureen Patrick
Beth Pfcifer
Barbara Quinn
Jack Raebiger
Barbara E. Ritter
John Selgrath
Julie Ann Snee
Richard Subers
Steve Ulrich
M. Jane Ulsh
Irene E. VanOtteren
Ronald Veit
Jacquelyn L. Volk
Katharine D. Weller

COURSE INSTRUCTORS

PROJECT KARE STAFF

Matthew M. Hickey
Alan D. Sexton
Randolph R. Tully, Jr.

CONSULTANTS

Dr. Janet C. Seidel
Dr. Edward L. Stranix
Wayne Curtis Weldon
Charles T. Young

TABLE OF CONTENTS

	<u>Page No.</u>
Preface.....	iii
Acknowledgements.....	iv
Participants.....	v
Instructors.....	vi
Art and Sensitivity.....	1
Language Arts.....	21
Math.....	40
History.....	80
Social Studies.....	106
Science.....	144
Appendix.....	186

ART AND SENSITIVITY....

ART AND SENSITIVITY

PAGE NO.

An Aesthetic Approach To Studying The Seasons.....	3
Beauty In The Environment.....	5
Creative Recycling.....	7
A Magic Circle.....	9
Plant Sensing.....	11
Blindfold Walk.....	13
What Is Noise?.....	15
Noise Or Sound.....	17
Neighborhood Noises.....	19

An Aesthetic Approach To Studying The Seasons

I. Introduction

This is an "aesthetic" activity designed primarily to give young children an awareness of the natural colors of fall - of course, another season may be substituted. An expansion of the activity is to compare the colors of another season with the colors of fall. By using a multi-sensory approach (touching, smelling, seeing, hearing) in investigating the colors of fall, we can introduce the concept of seasons in an appealing and effective manner. This activity will also aid the children in their development of observation technique.

II. Questions

1. To lead the activity, ask:
 - a. Who knows what the four seasons of the year are?
 - b. How many of you know what season of the year it is right now?
 - c. How do you know that it is fall?
2. To initiate the activity, ask:
 - a. How can we tell when fall is here? What are some of its signs?
 - b. If we take a walk around our school grounds, could we possibly find some other signs of fall?
3. To continue the activity, (outside) ask:
 - a. In coloring a picture of the school yard during this fall season, what colors will we use the most?
 - b. Are there special colors that we see only during the fall? Where are a lot of these colors found?
4. To expand the activity, ask:
 - a. Would each of you now draw another picture of the school yard showing a season other than fall? (It may be necessary to review the three other seasons, mentioning 3 or 4 sentences about each).
 - b. After everyone has finished his second picture, we will all try to guess which other season you have drawn.
5. To evaluate the activity, ask:
 - a. How observant were the students in pointing out the different signs of fall?

- b. How accurately did they transfer what they observed to their drawings?
- c. Did the students seem to enjoy this approach to art and science?

III. Equipment

1. drawing paper
2. crayons

IV. Procedure

1. Allow the students to walk around the school yard for several minutes, just observing signs of fall. (Try to go to an area without play equipment - it is distracting).
2. Talk about what they have seen and which colors predominate.
3. Have the children draw the school yard including all of the signs of fall that they can.
4. After the children have returned to the classroom, (or on a different day- depending upon interest and attention span) have them draw the school yard again but picturing it during winter, spring, or summer.

COULD THE ACTIVITY BE REPEATED IN EACH OF THE SEASONS AND COMPARISONS BE MADE AMONG THE NEW AND OLD DRAWINGS?

Beauty In The Environment

I. Introduction

Frequently in teaching about our environment we emphasize the negative aspects of our communities. This, of course, is necessary to point out the abuses to our land, air and water. However, it should be important, too, to make the children aware of the beauty and colors all around them. Suggest to the children to try to imagine the world all one color, or perhaps just grey and black. A graphic illustration for this is to elicit from some one the comparison of black/white TV and a color set. To give students an opportunity for a practical exercise in finding beauty in the environment, take the class out of doors. Each child, armed only with a large sheet of paper, is to return with an art project, having used for coloring materials only those things found in nature, such as berries, grass, flowers.

II. Questions

1. To lead to the activity, ask:
 - a. Have you ever thought what our world would look like if it were only one color, e.g. all green, blue?
 - b. Suppose there was no color in all of nature, just grey, white, do you think it would be as beautiful?
2. To initiate the activity, ask:
 - a. What would you compare a black/white or colorful world to?
 - b. How many colors do you think we can find around our school yard?
3. To continue the activity, ask:
 - a. How do you think we could demonstrate our findings?
4. To expand the activity, ask:
 - a. If you were given a large sheet of paper, but no pencils, crayons, or paint, how could you show us the colors in nature?
 - b. Can you make a guess as to how many colors we'll find in nature in our school yard?
5. To evaluate the activity, ask:
 - a. Were the children pleased with their results?

- b. Were the results creative, imaginative, original?
- c. Were the children's awareness of nature's colors heightened?

III. Equipment

- 1. A large piece of white paper.
- 2. Nature's palette.

IV. Procedure:

- 1. Talk about the aesthetics of the colors of our world.
- 2. Children given papers and told to select a site from which they will discover nature's art supplies.
- 3. Time limit given, then collect papers, display and enjoy!

YOUR QUESTIONS DEAL ONLY WITH COLORS. WHAT ABOUT TEXTURE, LINE, FORM, MASS?

Creative Recycling

I. Introduction

This activity is designed to provide an experience in creativity in the environment by using natural or junk materials. The object is to have students find useful purposes for discarded, old, or unused materials.

II. Questions

1. To lead to the activity, ask:
 - a. What determines that an item be declared as junk or rubbish?
 - b. What kinds of materials are most frequently discarded?
 - c. Why have they been thrown away?
2. To initiate the activity, ask:
 - a. How many items can you think of which are designed to be thrown away?
 - b. Can you make a tool from junk materials or "dead" objects?
 - c. If so, what can you make from it?
3. To continue the activity, ask:
 - a. What jobs does your tool perform?
 - b. How does it work?
 - c. Does it have multiple uses?
4. To expand the activity, ask:
 - a. Do you think we design too many materials to be "thrown away items"?
 - b. What would happen to the consumer if we ran out of raw materials from which certain items are made?
 - c. Can you make another useful item from the scraps left over from making your original tool?
5. To evaluate the activity, ask:
 - a. Where did you locate your raw materials for the tool?
 - b. How can you improve the tool you made?
 - c. Can you teach someone to make a similar tool and to use it?

- d. Does "nature" discard items or materials?
- e. How does nature's use of materials differ from man's use?

III. Equipment

- 1. Any kind of trash cans, bottles, papers.
- 2. Natural "dead" materials, wood, rocks, fur, boxes, etc.
- 3. GLUE, TAPE, NAILS

IV. Procedure

- 1. Have students search and observe the natural and man-made environment for used or "dead" materials.
- 2. Record where it was found.
- 3. How do you think it got there?
- 4. How has it changed since it was new? (rust, discoloration, decay)
- 5. Make a tool from some materials.
- 6. Use the tool to do some work and create another work of art.

QUESTIONS NEED NOT BE USED IN THE "PROCEDURE" SECTION, THIS SHOULD BE A SERIES OF DIRECTIONS.

A Magic Circle

I. Introduction

The "Magic Circle" can be studied in a cemetery or in any grassy place. Our pre-kindergarteners (four years old) would probably study nature in a magic circle in our school yard as we have a suburban site. Many urban children would find their magic circle only in a cemetery.

II. Questions

1. To lead to the activity:

- a. Where is the "circle" described?
- b. Are there plants in our circle?
- c. Are there animals in our circle?
- d. Are there things that don't belong in our circle?

2. To initiate the activity:

- a. How many different plants can you find?
- b. How many different creatures can you find?
- c. What is foreign matter?

QUESTIONS IN SECTIONS 1 AND 2 ARE MORE PROPERLY QUESTIONS TO CONTINUE, AS THE STUDENT MUST BE WORKING WITH HIS MAGIC CIRCLE TO ANSWER THEM.

3. To continue the activity:

- a. What use is grass?
- b. What use are flowers?
- c. What use is soil?
- d. What use are insects?
- e. What use are worms?
- f. How can we get rid of "foreign matter"?

4. To expand the activity:

- a. Would we find similar things in another "magic circle"?
- b. Do these things need each other?

5. To evaluate the activity:

- a. How extensive was the study?
- b. Do the children see the miniature world in a "magic circle"?

Equipment

1. String or hula hoop
2. Magnifying glass - if desired

Procedure

1. Make a circle with the string or put the hula hoop on the ground.
2. Study everything in the circle.
 - a. plants
 - b. insects
 - c. trash (cigarette butts, paper, etc.)
3. If needed - use a magnifying glass to examine the "wildlife".
4. Discuss findings.

ASSUMING 4 YR. OLDS CAN'T WRITE OR DRAW WELL, COULD THEY "RECORD"
THEIR FINDINGS BY COLLECTING SAMPLES?

Plant Sensing

I. Introduction

The purpose of this lesson is to help children become aware of the many types of vegetation that inhabit a cemetery. They will use all their senses to investigate the plants. (TASTING COULD PROVE DANGEROUS). They will learn to identify some trees. They will look at, smell and feel the grass and weeds. They will learn to name types of flowers that are placed near graves. They will be exposed to the parts of a plant, the parts of a flower and the parts of leaves. They will learn the difference between grass and weeds. They will be exposed to new vocabulary. Specimens will be brought back to the classroom and be pressed and ironed between two pieces of wax paper. They will learn the reasons why it is important that a variety of vegetation grow in a cemetery. They will learn the role plants play in aesthetic value, erosion control and as ground cover.

II. Questions

1. To lead to the activity, ask:

- a. What plants are growing in the cemetery?
- b. What does grass look like, feel like, smell like?
- c. What do trees look like, feel like, smell like?
- d. What do weeds look like, feel like, smell like?
- e. What do flowers look like, feel like, smell like?

2. To initiate the activity, ask:

- a. Why are these types of plants found in a cemetery?
- b. How are they cared for?
- c. Who cares for them?
- d. Why are they cared for?

3. To continue the activity, ask:

- a. What are the parts of a plant?
- b. What are the parts of a flower?
- c. What are the parts of a leaf?
- d. What kinds of flowers are in the cemetery?
- e. What kinds of trees do you see?
- f. What kinds of flowers do you see?

4. To expand the activity, ask:

- a. What can we do to help beautify the cemetery?
- b. Why is it important for plants to grow in a cemetery?
- c. Where in the cemetery do plants not grow? Why?

III. Equipment

1. Drawing paper, crayons and pencils.
2. Notebooks to record data.
3. Chart paper and magic markers.
4. Pots, potting soil, stones.
5. Seeds
6. Waxpaper, iron.
7. Box for collecting bark, weeds, wild flowers, grass, leaves.

IV. Procedure

1. Draw pictures of trees, grass, weeds, flowers.
2. Draw and label parts of a plant, flower, tree.
3. Record types of vegetation seen. Record how it feels and smells.
4. Plant seeds in pots to be taken to a cemetery and planted.
5. Press leaves between wax paper to preserve.
6. Place leaves under paper, crayon over to get a print.
7. Collect specimens of vegetation from the cemetery.
8. Chart things learned about plants.
9. List and learn to read vocabulary about kinds of plants, trees, parts of plants, flowers, leaves.
10. Discuss why these plants are found in the cemetery.
11. Discuss their value to us.

Blindfold Walk

I. Introduction

This activity is designed to increase the students' awareness of their environment as they use senses other than sight. It should serve to add another dimension to the world as they perceive it. Its grade level application is unlimited. This can serve as an awareness activity. It is hoped that by using senses other than sight, students will realize how much they depend on their sight. They should also realize that without sight, they are forced to pay more attention to information transmitted to them by their other senses and that they can be used more effectively than they had realized.

II. Questions

1. To lead to the activity, ask:

- a. How many senses do you have? What are they?
- b. Which sense or senses are you not dependent on?
- c. How could you prove this?

2. To initiate the activity, ask:

- a. What do you hear?
- b. What do you smell?
- c. What do you feel?
- d. Can you describe them?

3. To continue the activity, ask:

- a. Did you notice more without your sight?
- b. What things did you hear that you might not have seen?
- c. What things could you smell that you might not have seen?
- d. What things did you feel that you might not have seen?

4. To expand the activity, ask:

- a. Are your senses of hearing, smelling, and feeling stronger with or without sight? Explain your answer.
- b. How can you learn to use your senses other than sight more fully?

5. To evaluate the activity, ask:

- a. How carefully did they set up and carry out the experiment?

- b. Were they able to perceive their environment using senses other than sight?
- c. Are students more conscious of their other senses and do they realize their potential?

III. Equipment

- 1. Blindfolds
- 2. Outdoor environment suitable for blindfold walk.
- 3. List of items to feel, hear or smell

IV. Procedure

- 1. Have students pair off. One student is blindfolded, the other one is the leader or guide.
- 2. Have guide lead partner through as great a variety of environments as possible.
- 3. Ask students to describe what they smell, hear, feel as they walk. Let them bend down and feel the ground, brush, grass, leaves, flowers, etc. around them.
- 4. After 15-20 minutes have partners switch roles. Leader is now blindfolded; blindfolded person is now the leader.
- 5. Follow Up Activity - optional. Have students remove blindfolds. Take group through the exact same route they just took while blindfolded. Ask them what they heard, smelled, felt.

OTHER POSSIBLE FOLLOW-UPS MIGHT INCLUDE ENVIRONMENTAL ART OR CREATIVE WRITING.

What Is Noise?

I. Introduction

This is an awareness level activity designed to help first graders become more aware of different levels of sounds. They should be able to distinguish between sounds and noise and be able to give examples of each.

II. Questions

1. To lead to the activity, ask:
 - a. What kinds of sounds can you hear right this minute?
 - b. Are the sounds soft or loud?
 - c. Which sounds do you like? Dislike?
2. To initiate the activity, ask:
 - a. Would we hear different sounds outside?
 - b. What sounds can we hear now? (outside)
 - c. Do you hear any sounds that are moving?
 - d. What sounds are pretty to you?
 - e. Are there any sounds which disturb you?
3. To continue the activity, ask:
 - a. Are the disturbing sounds loud or soft?
 - b. What is another word for "loud sounds"?
 - c. Do you like noise?
 - d. Why or why not?
4. To expand the activity, ask:
 - a. Could we draw a mural of things that make noise?
 - b. Could we draw a mural of sounds that we like to hear?
5. To evaluate the activity, ask:
 - a. Are the children able to distinguish between loud and soft noises?
 - b. Are the children able to match a sound to the thing that makes the sound?

III. Equipment

1. Location to walk on school grounds
2. Paper
3. Crayons.

IV. Procedure

1. Have the children listen carefully to the sounds within the classroom.
2. Discuss the classroom sounds.
3. Take a walk outside and listen again for sounds.
4. Discuss outside sounds.
5. Make a mural showing things that make noise and things that make pleasing sounds.

I LIKE YOUR TIE BETWEEN THE AURAL AND VISUAL SENSES. COULD YOU ALSO BRING IN TASTE, TOUCH, AND SMELL?

Noise Or Sound

I. Introduction

To give one definition of noise would not be valid. What one person considers noise, another may consider sound. For instance, a well known situation goes like this... A teenager is in his room with the stereo quite loud. His father, hearing hard rock music coming from the room, considers this "noise" most annoying. The father goes to his study and plays Beethoven's 5th Symphony quite loud. On the teenager's way to getting a snack, he passes his father's room and thinks to himself "noise".

It all depends on the person. We could measure each sound and give a more scientific definition of noise.

II. Questions

1. To lead to the activity, ask:

- a. What is sound?
- b. What is noise?
- c. Is there a difference?
- d. Can someone give examples?
- e. Should we vote on each example, deciding what is noise and what is sound?
- f. Why do we differ?
- g. Does the listener's age or sex have anything to do with his or her vote?

2. To initiate the activity, ask:

- a. What is loudness?
- b. How can we measure loudness?
- c. Can loudness be measured by a machine?
- d. Can someone describe the last sound they heard which they considered loud?
- e. What are decibels?

3. To continue the activity, ask:

- a. What is pitch?
- b. Have you ever heard this in music class?
- c. How is a dog whistle different from a whistle used by a football official during a game?
- d. Do girls or boys talk mostly in a lower pitch?

4. To expand the activity, ask:

- a. What does our fire whistle sound like?

- b. Does it annoy you?
- c. Does the purpose justify the noise?
- d. What does a car sound like without a muffler?
- e. Is it a good law that every car must have a muffler?
- f. Do you consider motorcycles noisy?
- g. What should be done to keep noise levels down so they won't be offensive to people?
- h. Can anyone describe a scary sound?
- i. Can anyone describe a happy sound?
- j. What sound do you like best?
- k. What sound do you dislike the most?
- l. What is an echo?
- m. Has anyone heard their echo? Where?
- n. How is it that you hear it?
- o. What are sound waves?

5. To help evaluate the activity, ask:

- a. Is there a difference in sound depending on loudness and pitch?
- b. Are there some sounds you only hear at night? During the day?
- c. Can anyone give an example of a noise heard usually in the city? Usually in the country?
- d. What can we do to eliminate or reduce noise pollution?

III. Equipment

- 1. Tape recorder and tape

IV. Procedure

- 1. Ask students questions in section II, #1 to 4.
- 2. Take a field trip to the city or town and one to the country, or a park if there is no country to be found.
- 3. Tape record the sounds heard in each environment.
- 4. Compare the sounds recorded and list on the chalk-board.
- 5. Circle the loud sounds.
- 6. Decide which sounds you consider noisy.
- 7. List separately the noise and its source.
- 8. If the noise pollution can be avoided or lessened, contact the polluter by phone, letter, or, if possible, in person.

MOST OF YOUR "TO EXPAND" QUESTIONS ARE REALLY "TO CONTINUE" QUESTIONS. USE THE "EXPAND" SECTION TO INTRODUCE THE ABATEMENT CAMPAIGN YOU SUGGEST IN IV-8.

Neighborhood Noises

I. Introduction

This activity is to develop an awareness of each child's neighborhood as affecting the noise level of their environment. Students will be asked to stand in front of their own house for five minutes and observe conditions affecting and producing noise. A comparison of each one's observation will follow. Elementary math skills will be needed to count and compare objects producing noise and to graph the results.

II. Questions

1. To lead to the activity, ask:

- a. Do you live in the city? Can you describe where you live?
- b. If so, is the city big?
- c. Do you live in the country?
- d. Do you have neighbors? How far away are they? How close?
- e. Are there any animals around your area? Are they pets of people? Are there wild animals you might see?
- f. Do you live by any big streets? Do trolleys or trains run close by?

2. To initiate the activity, ask:

- a. If you stand in front of your house what noises might you hear?
- b. What causes these sounds?

(This step is preliminary to the actual observation. Since each child will observe in front of his own house, a survey paper will be given him for noting his observations to the questions:)

- (1) What noises do you hear?
- (2) What causes these noises?
- (3) How many times do you hear each noise?

3. To continue the activity, ask:

- a. What made noises in your observation?
- b. Were there any noises related to animal life?
- c. Were there any noises produced by people?
- d. Were there any noises caused by cars, traffic, etc?

4. To expand the activity, ask:

- a. Do different places tend to have different sounds?

- b. Where people had sounds that were about the same, were they in the same area? Were people who heard different sounds far away?
 - c. Is it better to have some sounds in certain areas and not in others?
 - d. Did you like any of the sounds you heard? Why?
 - e. Did you dislike any of the sounds? Why?
5. To evaluate the students effort, ask:
- a. Were they perceptive to the variety of objects producing sounds?
 - b. Were they able to contribute each observation for a tabulation representing sounds they had perceived in their neighborhood?

III. Equipment

- 1. Child with paper and pencil to note observations.
- 2. Graph made by children to compare individual findings.

IV. Procedure

Children stand in front of their own house for five minutes and list sounds heard and number of times each was noted. When the group gathers, a sharing of various observations will be discussed followed by a graphing of the results for an overview of contributors to neighborhood noise.

GOOD.

AS AN EXPANSION TRY QUANTIFYING SOUND LEVELS BY MEASURING THE DISTANCE AT WHICH A CONSTANT SOUND (A PEN CLICKING, FOR EXAMPLE), CAN BE HEARD.

LANGUAGE ARTS....

LANGUAGE ARTS

PAGE NO.

"Honey Is Sweet <u>But</u> The Bee Has A Sting".....	23
The Bog.....	25
Ye Olde Swimming Hole.....	27
Literature And Environment.....	29
Creative Writing In The Environment.....	31
Soaring In Nature.....	33
Ten Minute Walks.....	35
Should We Look, Listen, Or Read?.....	37

"Honey Is Sweet But The Bee Has A Sting"

I. Introduction

This activity can be done in conjunction with a study of Ben Franklin (his sayings) or as a part of values clarification (a Magic Circle). The topic could be, "Something I did or said that helped me but hurt someone else", or "Something I wasn't looking forward to but it came and it wasn't so bad after all", or "The good and bad of it". Suggested for grades 4-6. Some previous knowledge of honeybees is helpful but not necessary.

II. Questions

A. Lead-in

What did Ben Franklin, philosopher, mean when he wrote in his Poor Richard's Almanac, "Honey is sweet but the bee has a sting"?

B. Initiate

1. Where does honey come from?
2. Have you ever tasted honey? What do you think of it? (Have some available)
3. When Franklin wrote, "Honey is sweet but...", why did he use the word but? What can you infer?

C. Continue

1. Can you make a chart of 2 columns to clarify your thoughts on honeybees?

	<u>HELPFUL (advantages)</u>	<u>HARMFUL (disadvantages)</u>
POSSIBLE RESPONSES---	honey producer pollinate flowers make beeswax	worker stings people scare people some people can die from the sting of a bee

2. What do you now think of Franklin's saying in light of the chart list you just compiled?

D. Expand

1. Can you relate the saying to something that is in your experience with life (See Introduction)?
2. Should bee populations be controlled because of their possible health menace?
3. Should they be encouraged because of their wax and honey production?
4. From the bees' point of view, should humans take their hard-earned wax and honey?

E. Evaluate

1. Can you explain the bee saying in your own way?
2. Can you select another insect such as the ant or cricket and tell how it can be both helpful and harmful?

III. Equipment

Reference materials, paper, and pencil, honey.

SOUNDS LIKE A NEAT WAY TO BRING A NUMBER OF TYPICALLY DIVERGENT DISCIPLINES TOGETHER (LANGUAGE ARTS, HISTORY, SCIENCE).

The Bog

I. Introduction

This activity is for children in grades 3 and 4 largely unfamiliar with a bog area. It is an awareness activity. A trip will be taken to a bog area.

II. Questions

A. Lead-in

1. How do you feel if you are "bogged down" with work?
2. Where does that expression come from?

B. Initiate

1. What does the dictionary say?
2. Would you ride a bike in a bog?
3. Would you swim in a bog?
4. Would you play tag in a bog?

C. Continue

1. Where could we visit a bog locally?
2. Is it as you expected?
3. What do you see, hear, smell, feel?

D. Expand

1. What good are bogs?
2. What's the difference between a marsh, a swamp, a bog?
3. Learn "The Rattlin' Bog", an Irish folk song.

E. Evaluation

Write a poem about the bog we visited (Cinquain or Haiku is very suitable).

III. Equipment

- A. School bus to get to bog area
- B. Dictionary
- C. Map of area
- D. Making Music Your Own 4, Silver Burdett, 1965.

IV. Procedures

- A. Initiate discussion involving the word "bog".

- B. Plan and carry out trip to bog area.
- C. Follow up by using observations made to write descriptive poetry.
- D. Clean up muddy kids!

MIGHT IT BE BETTER TO WRITE THE POEM WHILE STILL AT THE BOG? YOU
COULD STILL WRITE AN ADDITIONAL ONE UPON RETURNING TO SCHOOL.
IMPRESSIONS MAY CHANGE.

YE OLDE SWIMMING HOLE

I. Introduction

This activity is planned for 3rd and 4th graders as the summer nears or before they go for classes in the school pool. Role play is involved as they act out with swimming motions and impromptu dialogue their swim in either pool or hole with friends. A visit will be made to a nearby swimming hole as part of the experience.

II. Questions

A. Lead-in

1. Are you a swimmer?
2. Where did you learn?

B. Initiate

1. Have you swum in both a man-made pool and a swimming hole?
2. Have you swum in both an indoor and outdoor pool?

C. Continue (at a local swimming hole)

1. Would you prefer to swim in a man-made pool or in a swimming hole?
2. What are the pros and cons of each?

D. Expand (back in the classroom)

1. Group 1 - swimming pool simulation
Group 2 - swimming hole simulation
Possible questions for the actors to get dialogue from:
 - a. Can you dive here?
 - b. Can you see underwater?
 - c. Do you know where you can touch bottom?
 - d. Is it slippery?
 - e. Are you cold?

E. Evaluate

Given a choice of swimming in a pool or a hole, which would you choose? Respond by: drawing a picture with you in it; writing a cartoon caption in a balloon.

III. Equipment

- A. Transportation to swimming hole
- B. Drawing paper.

IV. Procedures

- A. Discuss swimming, a talkable topic.
- B. Visit swimming hole.
- C. Return to do role play and evaluation.

YOUR "EXPAND" QUESTIONS REALLY BELONG WITH THE "CONTINUE" QUESTIONS.
USE THE "EXPAND" SECTION TO TAKE YOUR ACTIVITY IN NEW DIRECTIONS.
ARE THERE OTHER "ROLE PLAYING" SITUATIONS YOU COULD USE TO LOOK AT
OTHER ENVIRONMENTAL SITUATIONS?

Literature and Environment

I. Introduction

This activity is to explore the relationship of literature as a reflection of thinking on a specific area of environment (in this instance, air and wind) and creating an opportunity for personal expression on a similar topic.

II. Questions

1. To lead to the activity, ask:

- a. Have you ever been quiet and listened when the wind blew?
- b. What are some of the things you can hear?
- c. What do you feel like when a strong wind blows against you? a soft breeze?
- d. Do you know any things that air does for our world when it is created into a wind current?

2. To initiate the activity, ask:

- a. Different people have different thoughts when experiencing the same thing. These are some of the things people wrote when they thought about the wind and our world. (Plan activity for a breezy day and read selections in outside setting, i.e. Lillian Moore's Go Wind, and Wind Song, Morchette Chute's Weather).

3. To continue the activity, ask:

- a. Do you think they enjoyed being in the wind?
- b. Do you think everyone does? Why, why not?

4. To expand the activity, ask:

- a. Do you enjoy being in the wind?
- b. Do you always like or dislike it?
- c. Can you write some of your thoughts now as the wind envelops us?

5. To evaluate the activity, ask:

- a. Do the words you wrote express how you feel inside?
- b. Would you like to share your thoughts with us?

III. Equipment

Selections of poems concerning wind (from I Feel The Same Way by Lilian Moore; Poems Children Will Sit Still For, a

selection for primary grades compiled by Beatrice de Regniers,
Eva Moore, Mary White; Poems and Verses to Begin On, Donald
Bissett, Ed.)
Paper, pencil, a breezy day.

IV. Procedure

Listen to a selection of poems referring to wind. After discussing motives and reflective thoughts about meaning, children are provided a quiet time to express personal feelings on the same subject. A sharing of these written experiences may develop appreciation of wind, ourselves, and our world.

MIGHT THE CHILDREN HAVE THEIR OWN FAVORITE POEMS OR STORIES ABOUT WIND? IF NOT, COULD THEY FIND SOME?

THE QUESTIONS "TO EXPAND" SHOULD LEAD TO NEW TOPICS OR NEW DIRECTIONS.

Creative Writing In The Environment

I. Introduction

This activity has to do with exploring the environmental aspects of a pond and its surroundings in order to develop creative writing.

II. Questions

1. To lead to the activity, ask:
 - a. What things do you see and hear around and in a pond?
 - b. Can you hear the sound of crickets?
 - c. Do frogs live in ponds?
 - d. What color are snails?
 - e. Would you find turtles in a pond?
 - f. What kind of fish do you find?
2. To initiate activity, ask:
 - a. Where did these animals come from?
 - b. Did anyone place them there?
 - c. Which animal do you like best?
 - d. What ideas would you like to tell about your favorite animal?
3. To continue activity, ask:
 - a. What are we going to write about? (a pond, a fish, a bird, a bug, a reptile)
 - b. How would you describe this thing?
 - c. Does it have life?
 - d. What color is it?
 - e. Can it hop?
4. To expand the activity, ask:
 - a. What is the habitat of your favorite thing?
 - b. Does it live in soil or water?
 - c. Can you keep your animal as a pet?
5. To evaluate activity, ask:
 - a. Did the students explore to what extent they were able to describe their findings in a literary form.

III. Equipment

Pencil and paper

IV. Procedure

Have children visit a pond where they can study the environment of animals in a pond. Have them notice the characteristics of their favorite animal and describe it in a form of creative writing.

QUESTIONS "TO EXPAND" SHOULD SUGGEST FUTURE ACTIVITIES. SUCH AS:

ARE THERE OTHER PLACES YOU WOULD LIKE TO WRITE ABOUT?

ARE THERE OTHER FORMS OR TECHNIQUES OF WRITING THAT YOU COULD UTILIZE?

WHAT CAN WE DO WITH OUR COLLECTIVE WRITINGS?

WOULD OTHER PEOPLE BE INTERESTED IN READING THEM?

Soaking In Nature

I. Introduction

The purpose of this activity is to have children of all grade levels according to their age, record their impressions of nature by use of the senses - sight, touch, hearing, and perhaps smelling. This would be an awareness type activity utilizing observations as main technique.

II. Questions

A. Leading to activity:

1. Do you like to be outdoors by yourself, in with nature, far away from all signs of "civilization"?
2. Where can we go to do this, or to get as close to nature as possible?

B. Initiate the activity:

1. What kinds of observations with our senses can we make when we are out in nature? (take ideas for observations with all senses)
2. What kinds of day should we choose? (windy, breezy, balmy, spring, fall, etc.)

C. CONTINUE THE ACTIVITY?

D. Expand the activity:

1. What are your ideas about making this a long term project and keeping notes on several day's activity at different times of year and different kinds of weather.
2. Would children in schools in other areas of country (world), record the same impressions as you? Why? Why not?
3. What differences do you think they will find?

E. Evaluate the activity:

1. How enthusiastic were children's responses to this activity?
2. Did they seem to appreciate the sensing of nature?
3. Do they seem to respect their own and each other's impressions?

III. Materials: You and your senses and notebook to record your thoughts. Camera perhaps, to help focus visual observations-ideally, just you and your senses.

NEED "PROCEDURE" SECTION.

POSSIBLE "CONTINUE" QUESTIONS:

WHAT DO YOU SEE, SMELL, HEAR, TASTE, FEEL?
WHAT ARE YOUR INNER-MOST FEELINGS?

WHEN AND HOW ARE THEY TO RECORD THEIR IMPRESSIONS?

COULD YOU PROVIDE TIME FOR INDIVIDUAL STUDENTS TO SHARE THEIR
FEELINGS WITH THEIR CLASSMATES?

Ten Minute Walks

I. Introduction

All school children love to leave the building to go on excursions away from school. Ten minute walks take advantage of this enthusiasm as they lead kids to question and observe their environment. KARE suggests this three-part structure: "a stage-setting lesson indoors, a short trip outdoors to discover something specific, and a follow-up discussion back in the classroom". I've added an initial, longer introductory walk to gather questions and comments as topics for future short walks.

II. Questions

A. To lead to the activity:

1. How many of you enjoy being outside?
2. When you're outside, what do you do?
3. Do you ever see something that makes you wonder about or question nature?

B. To initiate the activity:

1. How might we gather and record some questions about nature?
2. What things should we take on a nature walk?
3. Who would like to be secretaries?

C. TO CONTINUE THE ACTIVITY?

D. To expand the activity:

1. After we gather our list of questions and observations, how can we discover our answers? (lead to both research and observation).
2. How might we share our discoveries with the rest of the school? (list suggestions)

E. To evaluate the activity:

1. What have we seen?
2. How is this (are these) related to the environment, i.e. how does it fit into nature's scheme?

III. Equipment

- A. Appropriate clothing for weather conditions
- B. Paper and pencils.
- C. Various art supplies (dependent on specific follow-up kids choose).

IV. Method

- A. Ask lead off questions (II A-C)
- B. Start with a long, question-gathering walk. Have a group of students write down questions, as much as possible.
- C. Thereafter, isolate one question for each 10-minute walk. Each excursion should be followed by a short discussion and some "student-chosen" summarizing activity.

SOUNDS LIKE A NICE APPROACH TO MAXIMIZING STUDENT INTEREST AND INPUT.

Should We Look, Listen, Or Read?

I. Introduction

Early citizens of our country sincerely believed that this was "...a rising nation spread over a wide and fruitful land, traversing all the seas with the rich production of their industry". And again, "...let us then, fellow citizens, restore to social intercourse that harmony and affection, without which liberty and even life itself are but dreary things".

Both of these quotations are from Jefferson's first inaugural address. They indicate the feeling of hope, of appreciation to be felt in the early days of our nation. Are we to infer that this feeling must completely disappear? Or can we "restore to social intercourse that harmony and affection" of which Mr. Jefferson spoke?

Today's activity is an attempt to do just this: To produce an awareness of the environment, to foster an attitude of appreciation, of the value of the little things, of the moment savored for itself, and not for its effect on others.

Today's students are part of a visually-oriented society. Is that all bad, or all good, or can something be said about it on both sides?

Again, I can't provide an answer; I can only suggest a survey, a response, a possible reaction.

II. Questions

1. To lead to the activity, ask:
 - a. How long did you look at TV yesterday? last week? Give an actual time estimate.
 - b. Combine your time total with the others in your group. Express it in terms of minutes; of hours.
 - c. How long did you look at the outdoors yesterday? last week? Give times estimate and combine as in "b".
 - d. How long did you read for fun and entertainment yesterday? last week? time estimate?
 - e. Do you feel each of these activities was important to you? Why or why not?
2. To initiate the activity, ask:
 - a. Which TV program you viewed had any of these factors: scenery, environmental information? (weather, pollution, traffic problems) List 3.

- b. What did you see on your outdoor explorations yesterday that had any of the factors in question a?
 - c. Have you read anything you'd like to consider in the same category as question a? Do not include textbook information.
 - d. What is your favorite (1) TV program, (2) outdoor activity, (3) book or poem.
3. To continue the activity, ask:
- a. Did you ask your parents the same question that we asked ourselves? (In 1 & 2)
 - b. Did their responses surprise you? (even if no real response verbally, student should get something from questions).
 - c. What were their favorites? List and tabulate.
 - d. What were your favorites? List and tabulate.
4. To expand the activity, ask:
- a. Did you find any similar TV favorite programs in:
 - 1. the family tabulations of TV
 - 2. the class tabulations of TV
 - b. Did you find any activity involving the environment that you, your parents, and your family share?
 - c. Did you find any activity that you and classmates share?
 - d. Did you find any literature that you and classmates share?
 - e. Did you find any literature that you and your family share?
5. To evaluate the activity, ask:
- a. Does your family consider TV a part of their immediate environment? Why or why not?
 - b. Does your family consider outdoor activity (including walking) a part of their immediate environment? Why or why not?
 - c. Does your family consider reading a part of their immediate environment?
 - d. Do your classmates consider that there is a difference between looking, as in Section 1, and seeing? Can one look at the outdoors? How about seeing?
 - e. Can one see the outdoors in photographs, in poetry, in reading? Or, is this looking?
 - f. Should we continue to collect samples of photographs, poetry, prose? Shall we make these available for others? Why, or why not?

- g. Shall we be more selective in our choice of TV programs? Why, or why not?
- h. Shall we share our outdoors activity with others? Why, or why not?
- i. Do you have any suggestions to make about helping others to enjoy our "samples"? (See question f above)
- j. Do you consider that TV programs can be structured to improve our immediate environment?

III. Equipment

- | | |
|----------------------------|----------------|
| 1. Paper | 7. Photographs |
| 2. Pencil | 8. Cameras |
| 3. Paste | 9. Magazines |
| 4. Scrapbooks | 10. Books |
| 5. Filing cards | 11. TV's |
| 6. Filing cabinets (small) | 12. Data |

IV. Procedure

- 1. Lead students to see if TV has a place in the meaning of term environment.
 - 2. Select teams to work together.
 - 3. Tabulate results of class and family survey.
 - 4. Collect favorite samples of photographs, poetry, excerpts, artworks.
 - 5. Share these - provide tapes of poetry.
 - 6. Make a collection of Quiet Time Writing.
 - 7. Take a younger student on one outdoor "seeing" activity.
 - 8. Share a poem with a younger student and/or family.
 - 9. Share a TV program with a younger student and/or family.
 - 10. Make an anthology and have selections - on these: games to play, things to do outdoors, poems to enjoy, stories to tell.
- These are to be from your "sharing students", if possible.

YOU ARE DEALING WITH QUITE A VARIETY OF TOPICS AND ACTIVITIES HERE. YOUR GENERAL CONCEPT OF COMMUNICATIONS AS A PART OF THE OVERALL ENVIRONMENT IS GOOD.

MATH

PAGE NO.

Plane Table Mapping Of An Area Of Our School Playground.....	42
Mapping.....	45
Solid Wastes-What Kind, Where From?.....	48
Graphing Litter.....	50
Calculating Speed In The Metric System....	52
The Study Of Data.....	54
How Wide Is Wide?.....	56
Leaky Faucets.....	58
Stream Velocity Measurement.....	60
Greater Variety Means A Healthier Stream..	62
Plot Study Of Living Organisms.....	64
Hula Hoop Math.....	67
Concept Of Density.....	69
Bird Walk.....	71
The Hexagon And The Honeybee.....	73
Cemetery Math.....	74
Measuring Cemetery Stones.....	76
Mapping And Measuring - Cemetery Use.....	78

Plane Table Mapping Of An Area Of Our School Playground

I. Introduction

This activity is planned for a class of about 20 third grade children. It could be introduced in correlation with a study of our local community, a Map Study Skills unit, or a Science unit concerning our environment. To reinforce their understanding of metric measurement the children would be requested to use meters and centimeters in their scale.

More than one class period would be needed to complete this activity. In fact, the children could spend several weeks on the project, depending upon their interest in expanding their maps and the conscientiousness with which they work.

II. Questions

A. To lead into the activity, ask:

1. How large do you think our school playground is?
2. What are the boundary lines?
3. What play equipment and areas are included?
4. What areas have been "landscaped"?
5. What part of our playground has been blacktopped?
6. What unit of measure would you use to measure the length and width of our playground? The area?
7. How many meters would you estimate the distance from our classroom to Beaver Creek to be?
8. Is any of our playground area wasted?
9. Could we draw some maps of our playground?

B. To initiate the activity, ask:

1. What are some particular areas of our playground we could map?
2. What objects or places could be used as "sighting points"?
3. What other places or points could we sight?
4. What equipment will we need to take outside with us?
5. What could we use for our "plane tables"?
6. What "jobs" will be involved? How can they be divided so that everyone in the group can participate?
7. What are some ways we can measure our baseline? Paces? Meters?

C. To continue the activity, ask:

1. Could we show directions on our maps?

2. Could you show the direction from the school playground to your homes?
 3. How could we show up-hill and down-hill?
 4. Are there any symbols we could use to show 'sighting points' and other places sighted?
 - *5. Can you think of any improvements we could make on our playground?
 - *6. How could we share our project with other classes?
- * = SOUND LIKE QUESTIONS TO EXPAND

D. To expand the activity, ask:

1. Did you draw a picture of each object you sighted?
2. Could you color in some background?
3. Could you make a three-dimensional map by adding representational symbols such as trees, fences, water, blacktop, school building, etc?
4. Could 2 squads combine their maps to make one larger composite map?
5. Did you locate any polluted areas?
6. Do you think that more trash cans are needed? Where?
7. Did you notice any equipment in need of repair or see anything dangerous that could be corrected?
8. Would you be interested in doing some nature study? What kinds of trees and plants did you observe? Insects? Fish?

E. To evaluate the activity, ask: (ask children)

1. How well did you follow the directions in completing the activity?
 2. How accurately did you measure your baseline and do your sighting?
 3. Did you make an appropriate scale?
 4. Did the members of your group cooperate? Was the leader democratic? Did each person contribute something?
 5. How many of our original questions (see Part A) can we now answer? (Teacher questions)
1. Were the children enthusiastic?
 2. How well did they grasp the skills involved in plane table mapping?
 3. Do they have a keener awareness of their immediate school environment?
 4. Did this activity reinforce their understanding of metric measurement?
 5. Did they learn some new vocabulary?

III. Equipment

- A. Initially the children would need pencils, centimeter

rulers or meter sticks, large pieces of paper, tape, and plane tables (heavy cardboard).

- B. To expand and complete their projects they might use crayons or magic markers, scissors, construction paper, paste, and possibly sticks, stones, small figurines, etc.

IV. Procedure

- A. The teacher could explain the procedure by using a transparency and overlays and an overhead projector. New terms such as baseline, sighting points, sighting, intersections, and scale would need to be carefully defined. If, following this explanation, some children still seemed uncertain about how to proceed, the teacher could even demonstrate the initial procedure inside or outside the classroom.
- B. The class would be divided into 4 squads of 5 children. One child in each group would be designated "squad leader". The leader would be responsible for seeing that the squad followed the procedure and that each child had an opportunity to participate in some way.
- C. Each squad would choose one area of the playground and proceed to map this area.
- D. The teacher would circulate to answer questions and give assistance if necessary.
- E. After the children have completed their sightings and marking of intersections, all groups would return to the classroom to continue working on their maps.
- F. The teacher would continue to circulate, assist, suggest ways of expanding, etc.
- G. When the groups have completed their maps, they would have an opportunity to share their activity with each other and even with other classes.

GOOD DEVELOPMENT OF QUESTIONS. IF ANY ONE SECTION IS WEAKER THAN THE REST, IT WOULD BE THE CONTINUATION SECTION.

Mapping

I. Introduction

This activity is designed to teach children how to map an area more accurately than merely sketching, yet more simply than measuring everything with a tape measure.

II. Questions

1. To lead to the activity:
 - a. If you wanted to show a friend in another city what our school playground looked like, how could you do it?
 - b. What if you didn't have a camera?
 - c. How could you draw a map of the playground?
2. To initiate the activity:
 - a. Do you remember "flat plane" mapping?
 - b. Could we use it to map our playground?
 - c. How many "teams" will we need?
3. To continue the activity:
 - a. What will we use for base lines? (fences)
 - b. How much can you include in your map?
4. To expand the activity:
 - a. What would happen if we made an overlay of each map and put all of them together on the overhead?
5. To evaluate the activity:
 - a. Do the several maps fit together?
 - b. Did you measure several locations and check your scale to see how accurate you are?

III. Equipment

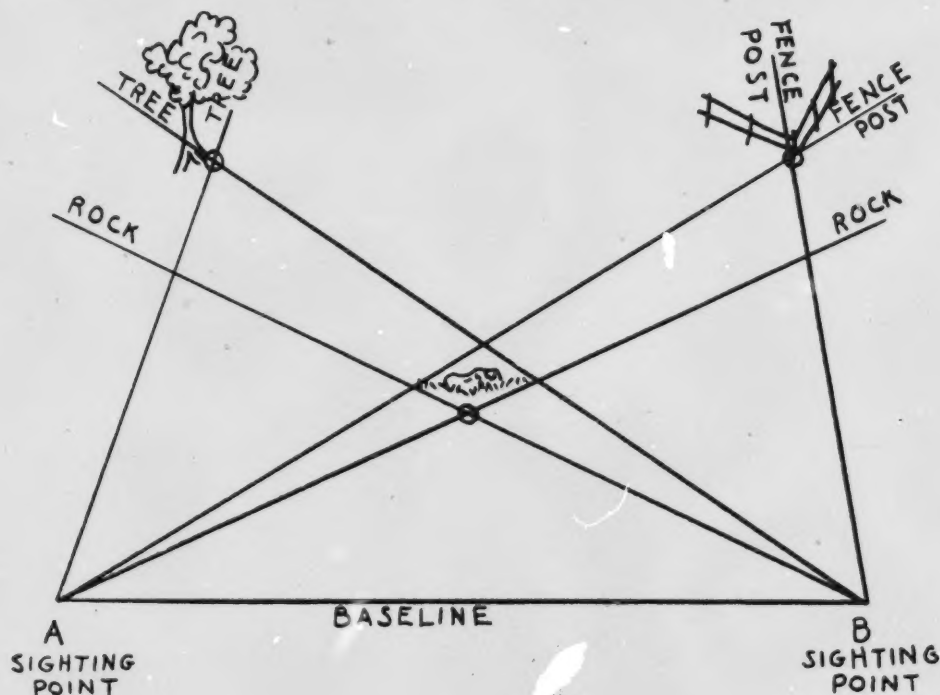
1. A ruler for each group.
2. A flat plane table or board on stand for each group.
3. Paper and pencils.
4. Tape measure.

IV. Procedure

1. Have the students discuss mapping to refresh their memories. Decide on scale for all.

2. Group and pass out supplies.
3. Groups map assigned areas using the following procedure:
(Leave room for sketch and items 1-9)
4. Maps reduced for overhead transparencies.
5. View and discuss transparencies.

YOU SHOULD DEVELOP ADDITIONAL QUESTIONS DEVELOPING THE CONCEPTS OF TRIANGULATION USED IN PLANE-TABLE MAPPING.



1. Determine a baseline along one edge of the area you intend to map. Make all subsequent sightings from the ends of this line.
2. Tape your map-to-be on a suitable, portable table. Draw a baseline on the map. Arbitrarily locate Point A.
3. Measure the real distance from A to B. Determine an appropriate scale for your map. Locate B, according to scale on your map.
4. Orient your table directly over point A such that by sighting down the baseline on the map, you will see the real point B. Your table should not move for the first set of sightings. If it does, reorient it with the baseline.
5. Using a straight edge, sight from point A on your map to each of the points you intend to plot. Draw a line down this line of sight. Label each line. When choosing points to sight to, keep in mind their visibility from point B.

6. Move your table and map to the real point B. Sight back along the baseline and orient your table again. The mapped baseline should correspond to the real baseline. Again the table must not shift for the duration of the sightings.
7. With the straight edge, sight from mapped B to all the points you previously sighted. Draw and label all these lines.
8. All your "data collection" is complete. Now circle or darken each of the paired intersections. Erase all connecting lines. Label each point as to what it represents. These will be spatially positioned on your map according to the scale you determined.
9. With these as points of reference, locate whatever other significant sites you wish to. Plot any other important data, such as north, the direction to school, up-hill, down-hill, etc.

Solid Wastes - What Kind, Where From?

I. Introduction

This activity is a study of how much waste material of various kinds is thrown out at home and at school. Its grade level application is unlimited. This can serve as a math activity, but it can also be used as a lead-in to a solid waste pollution unit. It is hoped that by observing the solid wastes generated by themselves, their classmates and their families, the students will gain an insight into how this problem relates to large-scale environmental efforts.

II. Questions

1. To lead to the activity, ask:

- a. What status must an issue have before it is considered a problem?
- b. How can people be made aware of problems?
- c. Why is it necessary to make people aware of problems?
- d. What are some of the problems which confront us in this classroom? In the entire school? At home? In our community?

2. To initiate the activity, ask:

- a. Is solid waste disposal a problem in this classroom? In the entire school? At home? In our community?
- b. How much solid waste do you and your classmates generate in one day?
- c. How might you find an answer to this problem?

3. To continue the activity, ask:

- a. Does it make a difference as to what type of solid waste it is?
- b. What various kinds of solid wastes do you dispose of at school? At home? In one day?
- c. How much of each kind of solid waste do you dispose of at school each day? At home each day?
- d. What proportion of your solid waste is paper? Metal? Glass?
- e. How many samples, and how much data should we collect in order to make accurate estimates of the solid wastes we generate?

4. To expand the activity, ask:

- a. How can we solve this solid waste problem?

- b. How much paper are you and your classmates wasting?
 - c. How can you use less paper and still get all of your school work done?
 - d. Are there collection stations in our town for paper, glass, and metals?
 - e. How can we sort trash for recycling before it leaves the classroom? Your home?
 - f. How is our town trying to solve the solid waste problem?
 - g. How are our state and country trying to solve the problem?
 - h. What new laws are being considered by state and federal legislatures?
5. To evaluate the activity, ask:
- a. How carefully did they set up and carry out the experiment?
 - b. Were they logically able to relate their data?
 - c. Were they able to suggest remedial actions for the problems at school, home, community, state and federal governments?
 - d. Have the students modified their behavior patterns at home and at school? Do they waste less solid materials? Do they recycle wherever possible?

III. Equipment

- 1. Trash
- 2. Cartons or wastebaskets
- 3. Scales for weighing trash
- 4. Paper and pencils

IV. Procedure

- 1. Put a cardboard box in one corner of the room. Label it PAPER ONLY. Ask everyone to put all wastepaper into the carton. Put all other types of waste materials into the classroom wastebasket. At the end of each day, weigh each type of solid waste collected. Record results. Keep a record for 1 week.
- 2. Do the same thing at home for 1 week.
- 3. Have students compare their results.
- 4. Have students find out what recycling stations are available in their town and their location.
- 5. Have students find out how town, state and federal governments are solving the solid waste problem.

Graphing Litter

I. Introduction

The purpose of this activity is two-fold. First, the students will pick up and examine the litter around their schools by areas and second, they will use graphing skills to show what they found.

II. Questions

1. To lead to the activity:

- a. If we went on a walking field trip around the school, what kinds of litter do you think you would find in front of the school?
- b. What kinds of litter do you think you would find behind the school?
- c. What kinds of litter do you think you would find on the east side of the school?
- d. Why do you think the back would be different from the front and side?

2. To initiate the activity:

- a. How could we collect litter from the 3 areas the fastest?
- b. Which group will collect litter from the front? Back? Side?
- c. Exactly what do we expect to collect?

3. To continue the activity:

- a. Now that you have the litter, how will you record what you found? (examine and classify)
- b. What information is needed? (items found, number of items found, where items were found)
- c. Can this information be placed on a graph? (Yes)
- d. Why would we want to use a graph? (to make it easier to see what litter was found)

4. To expand the activity:

- a. What do you think we could do to cut down on the litter in each area?
- b. In what other ways could we use graphs?

5. TO EVALUATE THE ACTIVITY:?

III. Equipment

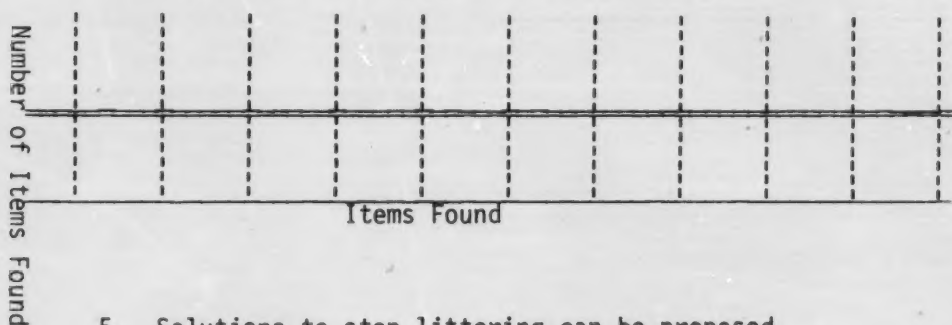
1. Sacks for each group
2. Paper, rulers and pencils

IV. Procedure

1. Class divided into 3 groups and assigned an area to collect litter.
2. After a specified time the groups return to the room.
3. Each group examines the litter they collected and makes a chart as follows:

Items Found	Number of Items Found	Where Items Found	Possible Guilty Persons	Solution

4. When all litter is charted, a graph can be made using different colored crayons to graph the results.



5. Solutions to stop littering can be proposed.

Calculating Speed In The Metric System

I. Introduction

Because we are approaching the full-time acceptance and use of the metric system, the following activity is suggested to acquaint students with the calculating of speed in that system.

II. Questions

A. To lead to the activity:

1. What is meant by the speed of an object?
2. If we wish to calculate the speed of an object (such as a car), what two bits of information must we know?
3. How are these two bits of information measured in the English system? in the metric system?
4. What does one mile equal in kilometers?
5. What formula is used to calculate speed?

B. To initiate the activity:

1. Twice during the day a flashing signal turns on automatically to warn drivers of the speed limit near our school. What is that speed limit?
2. If we know what one mile is equal to in kilometers, what is the speed limit in kilometers per hour when the signals are on?
3. When the warning signal is not flashing, what is the speed limit on the road near our school?
4. How would ~~this speed be~~ expressed in the metric system?

C. To continue the activity:

1. How can we calculate the speed (in the metric system) of the cars that pass our school?
2. Since it would be difficult to monitor the progress of a car over a distance of one kilometer, what would be a more "convenient" part of a kilometer?
3. If we mark the ends of this "convenient" part of a kilometer as parts A and B, how could we use this distance to calculate the speed of cars passing from A to B?
4. Can you now calculate the speed of several vehicles that pass your school?

D. To expand the activity:

1. To convert to the metric speed limit all the speed limit signs would have to be changed. What would the new speed limit sign read in town?

2. Which speed had the highest frequency? This is called the mode.
3. What was the average speed? This average is called the mean.
4. If all the different speeds were listed from highest to lowest, is there any one speed that has the same number of data above as well as below it? If so, this is called the median speed. Obviously, it is more easily found if you have an odd number of data to work with.
5. If your answer to question 4 was no, what two speeds fell in the middle?
6. What speed would represent the midpoint between these two middle speeds mentioned in the above question? This would then be called the median when you are working with an even number of data.
7. How could the data be best represented in the form of a graph?
8. What percent of the drivers clocked stayed within or below the speed limit?
9. What percent of the drivers clocked were above the speed limit?

D. To expand the activity:

1. What other data about the vehicles could have been collected and organized?
2. What are some of the ways that the data we collected could be used?
3. How could the information we collected be used in our community?

E.*

III. Equipment

Collection of data

IV. Procedure

Follow outline of questions above

E*-QUESTIONS THAT EVALUATE THE ACTIVITY

- a. DO THE STUDENTS UNDERSTAND THE DIFFERENCES AMONG AND IMPORTANCE OF THE MODE, MEAN, AND MEDIAN?
- b. WERE THE STUDENTS' CALCULATIONS, GRAPHS, AND TABLES ACCURATE?
- c. DO THE STUDENTS HAVE A BETTER UNDERSTANDING OF DATA AND STATISTICAL ANALYSIS?
- d. DO THE STUDENTS WISH TO PURSUE ANY COURSE OF ACTION AS A RESULT OF THEIR DATA ANALYSIS?

How Wide Is Wide?

I. Introduction

Traffic jams are a way of life. In the outdoors, with cars clogging the highways, they are sometimes monumental. Inside our public buildings, schools, homes--in all of these traffic flow needs regulation. A concept of measurement, of judgment, of width and length; this concept is inherent in our approach to the solution of problems involving traffic flow.

Today's activity keeps this in mind. It is an awareness exercise. It is designed to help the student to become cognizant of the variety of measurements involved in the movement of objects in his immediate environment.

II. Questions

1. To lead to the activity, ask:

- a. Have you ever been on the Schuylkill Expressway when there was a traffic jam? What did you see? What time of year was it? How many cars were there in your neighborhood--10,000? 2,000? 1,000? 10? (idea that a count can be important)
- b. Have you been in our lunchroom when the cafeteria line was moving? What did you see? How many students? Were they 5 across? 3 across? singly? Was the aisle wide enough?
- c. Have you been in our shopping area on Friday evening at 7:30 on the corner of Bridge and Main Street? What did you see? How many people? How many lines of cars? Were they 4 across? more?

2. To initiate the activity, ask:

- a. Is the Schuylkill Expressway wide enough for 4 lines of traffic? Is this in one direction? In both directions?
- b. Is your school corridor wide enough for 6 children to stand side-by-side? with arms extended? with arms down? For 4? For 2?
- c. Is the cafeteria aisle wide enough for 6 children to move side-by-side? Is it necessary for it to be?
- d. Is an interstate highway as wide as your home street? why or why not? (judgment and estimation)

3. To continue the activity, ask:

- a. Does a bicycle need as much space in width as a tractor-trailer?
- b. Does a minibike need as much space as a (1) bicycle (2) car, (3) truck?

- c. Should a front school walk be as wide as the intersection of our 2 streets? As wide as your front street? As wide as a bicycle path? Why or why not?
4. To expand the activity, ask:
 - a. In your opinion, should a sidewalk be 2 feet, 3 feet, 4 feet, or 10 feet wide? Give a reason for your answer.
 - b. Should our school corridors be wide enough for 4 children? 6 children? 8 children to work? Give a reason for your answer.
 - c. Should our cafeteria aisle be widened? Give a reason for your answer.
 5. To evaluate the activity, ask:
 - a. Did each judgement in 2,3,4, need some measurement concept of width?
 - b. Did each width in 2,3,4, involve planning on the part of builders of highways, public buildings, parks, streets, home, etc.
 - c. Did each involve some concept of size in relationship to width?
 - d. Does the question of free traffic flow involve volume of traffic in relationship to width?

Note: This could be the subject of another survey for comparison: i.e., Church corridors, home corridors.

III. Equipment

1. Paper
2. Measuring instruments: tapes 100 feet or 50 feet, yard sticks, (meter sticks optional)

IV. Procedure: Measurement may be Teams 1 and 2 English, 3 and 4 Metric

1. Measure school corridors.
2. Measure door entrances to corridors.
3. Measure cafeteria aisle.
4. Measure path at front door-home.
5. Measure sidewalk at school.
6. Measure Main St. width (2 lanes and 2 parking lanes)
7. Measure Bridge St. width (2 lanes and 2 parking lanes)
8. Measure and match students to corridor (arm outstretched)
9. Measure and match students to cafeteria aisle (judgment from above measurement exercises to alert students to the ramifications of the question of solid waste management.
10. Measure and match students to corridor (arms down)

YOU'VE BROUGHT MANY CONCEPTS FROM DIVERGENT FIELDS INTO ONE ACTIVITY, A NICE WAY TO DEMONSTRATE INTERDISCIPLINARITY.

Leaky Faucets

I. Introduction

This activity is a study of how thousands of gallons of water are wasted because of improperly maintained faucets. Its grade level application is unlimited; however, some of the math must be eliminated for younger children. This can serve as an awareness and/or math activity. It can also serve as a water conservation activity. It is hoped that by observing the amount of clean, usable water that is wasted from one leaky faucet, students will learn to conserve water more efficiently. They should also gain some insight into the amount of water that is wasted on a larger scale and how it relates to large scale environmental efforts.

II. Questions

1. To lead to the activity, ask:

- a. How do you and your family waste natural resources?
- b. How can you be made more aware of these misuses?
- c. Why is it necessary to make you and others aware of this wastefulness?

2. To initiate the activity, ask:

- a. How many gallons of water does a leaky faucet waste in 24 hours? In a month? In a year?
- b. How much does this wastefulness cost you and your family, your school, and/or your community?
- c. Can you and others be made to recognize this as a problem?

3. To continue the activity, ask:

- a. Does it matter how many faucets are leaking?
- b. Do all faucets waste the same amount of water?
- c. How much must people pay for the water they use?

4. To expand the activity, ask:

- a. How do you think you, your family, and/or classmates would react to the data gathered in this activity?
- b. Does the data gathered in this activity have any relation to conservation of our natural resources?
- c. What action could you, your family, and/or classmates take to remedy this situation?

5. To evaluate this activity, ask:

- a. How carefully did they set up the experiment?
- b. How carefully did they collect the data?
- c. How carefully did they analyze the data?
- d. Were they able to suggest remedies to the problem?
- e. Are students conserving water more at school and at home?

III. Equipment

1. Container to collect water.
2. Measuring cup.
3. Leaky faucet.

IV. Procedure

1. Put a container under a leaky faucet in your home or school. (If you do not have a leaky faucet, adjust a faucet so it will drip slowly).
2. Collect water for one hour.
3. Use a measuring cup to measure the amount of water collected in one hour.
4. Record your results.
5. For more accuracy, make three measurements and average them. Record results.
6. Find the amount of water wasted from one faucet during one day.
7. What is the total number of leaky faucets in your school and in the homes of your classmates and teacher?
8. If all of you wasted the same amount you measured, what is the total waste of all the faucets in school and classmates homes' per day?
9. How much is wasted per year?
10. How much does water cost in your community?
11. How much would the water you and your classmates waste per year cost? (remember 7.5 gallons - 1 cubic foot)

YOUR ACTIVITY MIGHT BE A BIT CLEARER IF ALL YOUR QUESTIONS WERE ORGANIZED IN THE SAME SECTION. COULD YOU DEVELOP SOME ADDITIONAL ONES TO GET THE KIDS TO FIGURE OUT THE MEASUREMENT PROCEDURES?

Stream Velocity Measurement

I. Introduction

This exercise is to teach students how to determine the speed at which water moves in a stream.

II. Questions

1. To lead to the activity, ask:
 - a. Why might we want to measure the velocity of a stream?
 - b. How might we go about measuring the velocity?
2. To initiate the activity, ask:
 - a. How many students will be needed in each group? Why?
 - b. What will each person do?
3. To continue the activity, ask:
 - a. Is one sample enough?
 - b. How many should we do?
 - c. Did each person have a chance to do each job?
4. To expand the activity, ask:
 - a. How can we use the velocity measurement in determining stream flow rate?
 - b. What other measurements do we need to make? (width, depth)
5. To evaluate activity, ask:
 - a. What figures does each group have?
 - b. How do they compare with each other?
 - c. What might account for the differences?

III. Equipment - for each group of three (3)

1. stop watch
2. floats - example: oranges
3. tape measure
4. a reasonably straight section of stream

IV. Procedure

1. Have each group measure a distance of 100 feet or more.
2. Someone is needed to toss in float at upstream mark.
3. Someone is needed to measure and record time of passage of float from upstream mark to downstream mark.

4. Someone is needed to signal the passage of float past downstream mark.
5. Calculate velocity in feet per minute, feet per second, meters per minute, miles per hour, etc.

GOOD

Greater Variety Means A Healthier Stream

I. Introduction

Balance of Nature is a topic often discussed in the lower grades. This activity will help the students, grades one through three, become aware of balance or lack of balance of nature. Without getting involved with detailed processes, the students will be able to view and make decisions about a body of water. This activity leads directly into a more intense study of the stream such as chemical analysis of the water.

II. Questions

1. To lead to the activity,ask:

- a. What do you think of when I say "describe a stream?"
- b. What kinds of things are around or in a stream?
- c. Are streams important to us?

2. To initiate the activity,ask:

- a. What is a healthy stream like?
- b. Are there few or many living things in a healthy stream?
- c. How can we tell if this is true?

3. To continue the activity,ask:

- a. Do we have a healthy stream?
- b. What things did we find lived near or in the stream?

4. To expand the activity,ask:

- a. If stream seems out of balance,ask:
 1. What could be a reason for these results?
 2. Can we do anything about the pollution?
- b. If stream is healthy,ask:
 1. Can we do anything to help keep the stream healthy?

TO HELP DETERMINE HEALTHY OR NOT YOU MIGHT TRY OBSERVING A VARIETY OF STREAMS.

5. To evaluate the activity,ask:

- GOOD
- a. Did the location give a good idea of the whole stream?
 - b. Were the students able to distinguish the different types of plants and animals at the stream?
 - c. Were the students able to determine if the stream was healthy from their observations?
 - d. What other activities were followed as a result of this activity?

III. Equipment

1. writing material

Procedure:

1. Tell the students to pick a spot and sit or stand and observe the stream.
2. Tell them to write down anything that would be important in deciding if the stream was healthy.
3. After a set time have the students return to a designated place to discuss findings. This would be better held right along the stream.
4. Instruct the students this is just an overall view of the stream.

Plot Study Of Living Organisms

I. Introduction

This activity is designed to increase the student's awareness of their environment. It can also be used as part of a mini-course on diversity of living organisms or on classification. Its grade level is unlimited; for older students discussion questions and complexity of classification will be more involved. It is hoped that students will become more aware of the diversity of small animals, plants, and insects which inhabit almost any environment.

II. Questions

1. To lead to the activity, ask:

- a. How many total and how many different kind of plants are in 1 square meter of this environment?
- b. How many total and how many different kinds of small animals are in 1 square meter of this environment?
- c. How many total and how many different kinds of insects are in 1 square meter of this environment?

2. To initiate the activity, ask:

- a. Do you think you can find any living organisms in a randomly thrown hula hoop plot?
- b. If so, what kinds of organisms will you find?
- c. How many of each kind will you find?

3. To continue the activity,ask:

- a. What kinds and how many total plants did you find?
- b. What type of plant predominates in your plots? Why?
- c. What kinds and how many total small animals did you find?
- d. What type of small animals predominates in your plots? Why?
- e. What kinds and how many total insects did you find?
- f. What type of insects predominate in your plots? Why?
- g. What difficulties did you encounter in finding, catching and observing these living organisms?

4. To expand the activity, ask:

- a. How do your plot studies compare to your classmates' studies?
- b. If you had more or less organisms in your plot than your classmates, what caused this?

- c. Which group found the most organisms? Why? What was different about their plots?
 - d. Did you find more than one way of classifying organisms?
5. To evaluate the activity, ask:
- a. How carefully did they set up and carry out the experiment?
 - b. Did the examiners and recorders cooperate?
 - c. Did they have constructive arguments concerning their methods of classification?
 - d. Did they see there are many ways of classifying organisms?
 - e. Are students more aware of the diversity of small animals, plants and insects which exist everywhere?
 - f. Did anyone wish to continue or further this activity in any way?

III. Equipment

- 1. Hula hoop, coathangers (pulled out into a circle)
- 2. Wooden stakes and string.
- 3. Meterstick
- 4. Baby food jars, if desired.
- 5. Sticks or stirring rods for poking.
- 6. Paper and pencil.

IV. Procedure

- 1. Divide students into pairs or small groups.
- 2. Give each group a hula hoop or coathanger.
- 3. Have students randomly throw hula hoop or coathanger.
- 4. Have students partition the plot into about 4 parts with string and stakes or toothpicks. (This facilitates counting and examination)
- 5. One student acts as examiner, using stirring rod or stick to poke around and examine plot.
- 6. Another student acts as recorder. He should record a description of each type of organism found and how many of each type were found.
- 7. Optional - samples of the findings may be taken back to the classroom for further observation. (Use baby food jars)
- 8. Have students determine the area of ground they examined ($A = \pi r^2$, for a circular plot)
- 9. Have each group determine the total number of living organisms found in their plots.
- 10. Have each group determine the number of different kinds of organisms present in each plot.

11. Optional - students may do 3 plots and take the average.
12. Determine class averages for total number of organisms and number of different kinds of organisms.
13. Determine dominant plant, small animal, and insect for each group and the class.
14. Determine reasons for these averages.

Hula Hoop Math

I. Introduction

Math for 4 year olds is extremely simple. I would not delve too deeply into any subject. I would use the "hula hoop" in teaching math to my class. We would put it on the ground and count the different forms of plant & animal life which can be found within it. In this way, we would learn math and become aware of a segment of life. We'd also learn math terms.

II. Questions

1. To lead to the activity:

- a. What do you think lives in the grass?
- b. How many kinds of plants do you think are in our lawn?

2. To initiate the activity:

- a. Are all plants in our hoop the same size?
- b. Are the insects bigger than our plants?

3. To continue the activity:

- a. Are trees plants?
- b. Are there few or many different types of plants?
- c. Are there few or many different animals (or insects) in our ring?

4. To expand the activity:

- a. Would we find similar plants and insects in another ring on our lawn?
- b. What are the insects doing?

5. To evaluate the activity:

- a. How many types of plants did we find?
- b. How many different types of insects did we find?
- c. What terms did the children learn? (Hopefully - few/many, tall/short, alike/different).

III. Equipment

1. Hula hoop.
2. Pencil and paper for the teacher (if done late enough in the year, the pupils can record own data).

IV. Procedure

1. Discuss sizes and terms - few, many, tall, short, alike, different, etc.
2. Discuss what to look for.
3. Put "hula hoop" on lawn.
4. Study what we see inside the ring.
5. Write down what is seen and then discuss how many different plants and animals we find.

This can be enlarged or cut down according to the ability level of the children.

SOUNDS LIKE A NEAT WAY TO INTRODUCE SOME STANDARD TOPICS
BY USING THE ENVIRONMENT.

Concept Of Density

I. Introduction

This activity can be used in conjunction with a diversity study in order to confine an ecological area so that quantitative comparisons can be made. By increasing the specificity of observation, the activity can be adapted to any grade level.

II. Questions

1. To lead to activity, ask:

In our study area, how do the number of trees with simple leaves compare to the number of trees with compound leaves?

2. To initiate the activity, ask:

- a. How do compound and simple leaves differ?
- b. Are all simple leaves alike?
- c. Are all compound leaves alike?
- d. Can we arrive at a meaningful comparison just by going out and counting each kind?

3. To continue the activity, ask:

- a. How many different kinds of simple leaves and of compound leaves did you find?

4. To expand the activity, ask:

- a. Should we group all simple leaves into one single category and all compound leaves in another single category?
- b. Would we be able to compare grasses using this method?
- c. Must we count every single blade of grass?
- d. What method might we use where populations are large?
- e. What factors must we control if we are to compare?
- f. If we define a limited area and calculate the number of trees per unit area, what name is given to the number which we arrive at?
- g. In what units do we express our answer?
- h. What environmental factors might alter our answer?

5. To evaluate the activity, ask:

- a. Can we use this procedure to determine the density of stream organisms in a particular stream?
- b. Must we categorize the organisms first in order to

- make a comparison?
- c. What specific factors might influence our answer?

III. Equipment

1. Ruler
2. Notebook and pen

IV. Procedure

1. Select a woodland area for study.
2. Collect leaf samples.
3. Observe different samples, categorize and agree upon which particular categories are going to be compared.
4. Decide on an approximate area (preferably rectangular in shape) following discussion of need to delineate an area for collecting, if comparisons are to be made.
5. Measure typical pace of observer and convert to feet.
6. Pace off two sides of rectangular area.
7. Calculate number of square feet confined in area.
(This measurement could be converted to acres to help students gain an appreciation for a unit which is often used in real estate transactions.
(1 acre = 43,650 square feet)
8. Compare number per unit area of selected categories.
9. Lead into discussion of density concept.
10. Expand discussion into use of a similar process in other situations.
11. Discuss units for expressing density.
12. Discuss factors that influence density.

Bird Walk

I. Introduction

This activity is designed to increase the students' awareness of their environment through particular birds. Its grade application is unlimited. This can serve as an awareness activity or as part of a mini-course in animals. It is hoped that by observing birds, the students will get a feeling for an activity which can be carried on for the rest of their lives.

II. Questions

1. To lead to the activity, ask:

- a. How many different types of birds do you think live in this area?
- b. How many birds do you think live in this area?
- c. Why do birds choose to live in this area?

2. To initiate the activity, ask:

- a. Describe a _____ (Name of a Bird)
- b. What does a _____ eat?
- c. What type of home does it live in?
- d. What are some of its other activities and habits?

3. To continue the activity, ask:

- a. How many birds did your group see?
- b. How many different kinds of birds did you see? List them.
- c. What type of activities were the birds involved in when you observed them?
- d. In what ways did the birds you saw differ from each other?

4. To expand the activity, ask:

- a. Do the differences in foot structure indicate anything about how a bird lives?
- b. Do the differences in color indicate anything about how a bird lives?
- c. Do the differences in size indicate anything about how a bird lives?
- d. Do the differences in beak type indicate anything about how a bird lives?
- e. Would you observe the same kinds of birds in the morning, as in the afternoon, or as in the evening?

5. To evaluate the activity, ask:
 - a. How carefully did they set up and carry out their observations?
 - b. Did the students take this activity seriously? Were they quiet and did they move slowly?
 - c. Can students recognize the common birds of the area?
 - d. Are students more conscious of the birds around them?

III. Equipment

1. Binoculars
2. Bird identification book.
3. Pencil and paper.
4. Outdoor environment suitable for bird watching.

IV. Procedure

1. Divide students into small groups. Tell student not to make any noise (whisper or use hand signals) and to move slowly through the area.
2. Ask each group to record the total number of birds seen.
3. Have students describe the birds they see and indicate what they are doing.
4. Gather all students for a group discussion. Have them report their findings.
5. Discuss the ways in which birds differ from each other.
6. Discuss what these differences indicate about how the bird lives.
7. Repeat activity at different times - morning, afternoon, and evening.

COULD THE DATA THE STUDENTS RECORD BE USED TO COMPUTE A DIVERSITY INDEX NUMBER? COULD YOU THEN USE THESE INDICES IN COMPARING THE WALKS YOU TAKE AT DIFFERENT TIMES OF THE DAY? COULD YOU ALSO MAKE COMPARISONS TO DIFFERENT SEASONS OR TO DIFFERENT HABITATS?

The Hexagon And The Honeybee

I. Introduction

This activity is for children doing research on honeybees or studying geometry. The grade level is 3-6. Observation and research (reading and/or drawing) are required.

II. Questions

A. Lead in:

How can we tell whether we have a bees' nest or a wasps' nest? (assuming you have a cross-section of an actual nest or a picture)

B. Initiate

1. What is the name of the shape of each cell?
2. Why do you suppose the shape is hexagonal?

C. Continue

1. How can we investigate the advantages of the hexagonal arrangement?
2. Check with encyclopedias, science texts, non-fiction books. Do they all give the same reasons?

D. Expand

1. Divide the class into groups, each group taking a shape (square, circle, triangle, hexagon, octagon, etc.) to try out. Trace repetitiously to form mock honeycomb.
2. Which seems the most efficient use of space? Strongest?
3. Bring comb honey to school. Examine the arrangement and then serve chunks on crackers.

E. Evaluate

Draw 5 or more connecting sections of a bees' honeycomb. Make each cell about 20 times life size or about 2cm from vertex to vertex. In each hexagon, write ideas you gained as you studied about the structure of the nest.

III. Equipment

- A. Cross section of a honeycomb.
- B. Geometric shapes to trace or compass, protractor, ruler to make own.
- C. Comb honey.

SOUNDS LIKE A NICE APPROACH. YOU SHOULD, HOWEVER, SAVE YOUR INSTRUCTIONS FOR THE PROCEDURE SECTION. USE THE QUESTIONS TO SUPPORT AND DEVELOP THE PROCEDURES YOU'VE OUTLINED.

Cemetery Math

I. Introduction

The objective is to show the class the value of the cemetery as a math classroom. While math was the main purpose for our trip, an important secondary motive was to help overcome cemetery prejudices and fears.

II. Questions

1. To lead to the activity

- a. Have you ever gone to the cemetery for anything other than a funeral?
- b. How do you feel about taking a field trip to a cemetery?
- c. What do you think we could learn at a cemetery?

2. To initiate the activity

- a. How would you find the age of people buried in the cemetery?
- b. How would you determine the average age of death for a given section of the cemetery?

3. To continue the activity

- a. In a given period, did men or women die younger?
- b. How can a record be made of a tombstone?

4. QUESTIONS TO EXPAND

5. QUESTIONS TO EVALUATE

III. Equipment

1. Mimeographed activity data sheets and pencils for I, II and III
2. Large sheets of newsprint and black crayon

IV. Procedure

1. Copy 20 names from headstones, put down birth date and date of death - determine ages.
2. Record ages of death for 15 men and 15 women, determine the average age for each group.
3. Record the number of men and women found in a given area - find the average ages.

4. Make a rubbing to record the tombstone showing the oldest person you found.

- a. select gravestone
- b. place a sheet of newsprint over the tombstone, secure it with tape
- c. holding crayon flat rubbing over the entire tombstone, image will show exactly as the tombstone.

GOOD ACTIVITY, BUT 2 SECTIONS ARE MISSING.

Measuring Cemetery Stones

I. Introduction

This is an awareness level activity designed as a follow-up to a measuring unit in first grade. The children will be observing the sizes and shapes of the gravestones and then will actively participate in the measuring of the stones in certain sections of the cemetery. They will work in pairs for the activity.

II. Questions

1. To lead to the activity, ask:
 - a. How many of you have ever been to a cemetery?
 - b. What kinds of things do you see in a cemetery?
2. To initiate the activity, ask:
 - a. Are all the gravestones in the cemetery the same size?
 - b. Are they all the same shape?
 - c. How could we find out which stone is the longest?
3. To continue the activity, ask:
 - a. Is the longest stone necessarily the highest stone?
 - b. How could we find out which stone is the highest?
 - c. How are we going to remember all these measurements?
4. To expand the activity, ask:
 - a. Whose section had the longest stone?
 - b. Whose section had the widest stone?
 - c. Could we also find the smallest stone?
 - d. ARE THERE WAYS TO TAKE MEASUREMENTS WITHOUT USING INCHES OR FEET?
5. To evaluate the activity, ask:
 - a. How well do the children understand length and width?
 - b. How accurate were the childrens' measurements?

III. Equipment

1. Cemetery
2. Paper
3. Pencils
4. Meter sticks

Procedure:

1. Have the children walk around the cemetery and observe the sizes and shapes of the cemetery.
2. Divide the cemetery into sections.
3. Have children pick a partner.
4. Assign pairs to each section.
5. Have children measure and record lengths and widths of stones in their section.
6. Make comparisons of the measurements of stones in each section.
7. Discover the longest and the widest stone in the cemetery.

(The cemetery used is a small cemetery.)

Mapping and Measuring - Cemetery Use

I. Introduction

Since a cemetery has many markers within a small area, it offers an excellent site for mapping. This activity is designed to combine skills of observation, measuring (linear) and mapping as second and third graders enjoy their outdoor surroundings.

II. Questions

1. To lead to the activity
 - a. How many of you have ever been in a cemetery? How did you feel? Why?
 - b. I wonder if we could find some good uses of a cemetery? What could we learn?
 - c. What have we been studying in Soc. Studies?
2. To initiate the activity
 - a. How could we connect maps with a cemetery?
 - b. Would anyone like to try?
3. To continue the activity
 - a. What man-made features could we plot on our maps?
 - b. What natural features?
 - c. Shall we just go charging in and begin? Why or why not?
4. To expand the activity (use after activity).
 - a. What other activities would be fun "teaching" things to do?
 - b. Can we think of activities for each subject?
5. To evaluate the activity (Also after activity).
 - a. Do your maps all look alike?
 - b. Whose map is neatest? Most colorful? Most creative? Most detailed? Most accurate?

III. Equipment

1. String and letter and number paper slips
2. Tent stakes

3. Pre-dittoed grid with key box
4. Pencils and crayons
5. Tape measures

IV. Procedures

1. Before students arrive, plot a grid area and lay string out to designate sections of area.
2. Fasten labels to each section to correspond to ditto.
3. Students' jobs
 - a. Measure perimeter and label on map.
 - b. Fill in tombstones, major land characteristics (ie. hills, water, trees, etc.)
 - c. Make key corresponding to symbols on map.

PLANE-TABLE MAPPING IS AN ELEMENTARY SURVEYING TECHNIQUE.
IT SHOULD PROVE USEFUL TO YOU.

HISTORY

PAGE NO.

A Pain From The Past.....	82
A Spring, In A House?.....	84
Down On The Farm.....	86
Bakerman, Bake Me Some Bread.....	87
Women Have Changed! - Or Have They?.....	88
What Was It Like Before?.....	89
Trash Can Archenology.....	90
Looking Over The Years.....	91
Changes In Types Of Print.....	93
The Cemetery As A Classroom.....	95
What's There To Know In A Cemetery?.....	97
Rubbing Tombstones.....	99
The Cemetery - Is Everything Dead In There?..	102
Who's Who In The Graveyard.....	105

A Pain From The Past

I. Introduction

In this activity, students will make their own types of stained glass. The activity deals with the art of making stained glass. It is to be centered around a local church in the community in which the students will observe and interview. Later on, they will make their own style stained glass in the classroom. This activity can be used by students from fifth grade through ninth grade. It can last from 2 days to 5 days depending on the types of methods to be used by both teachers and students. Supervision at the church could consist of Minister or Priest and other church personnel along with the teacher. Work in the classroom can be supervised by the classroom teacher.

II. Question

1. Lead into the activity:
 - a. What is stained glass?
 - b. Do any of your churches have stained glass windows and why?
 - c. How did they find their way into churches?
 - d. Where did this idea develop?
2. To initiate the activity:
 - a. What are stained glass windows?
 - b. What purpose(s) do they, or did they serve?
3. To continue the activity:
 - a. How were they made in the past?
 - b. Are stained glass windows still made today?
4. To expand the activity:
 - a. How are stained glass windows made today?
 - b. Are they made of the same materials and what are these materials?
 - c. Do they still serve the same purpose?
5. To evaluate the student's efforts:
 - a. Did the students ask questions?
 - b. Did they seem enthusiastic?
 - c. How did they work together?
 - d. Did they all finish their projects?

}

VERY PERTINENT

APPROACH TO

EVALUATION!

III. Equipment

- a. Notebook and pencil
- b. Tape recorder
- c. Cellophane Paper
 - (1) various colors: red, blue, green, yellow, clear
- d. Scotch tape
 - (1) clear
 - (2) masking tape
- e. Scissors
- f. Cardboard or paste board.
- g. Water colors or poster paint.
- h. Compass and ruler
- i. Magic marker block

IV. Procedure

- 1. Observe in the Church
- 2. Interview Church personnel, if available.
- 3. Evaluate what they have learned.
- 4. Research, for additional information if needed (depends on level of students)
- 5. Classroom activity:
 - a. Teacher evaluate students to determine if project can be done better in a group or on an individual basis.
- 6. Project
 - a. Students are to make their own stained glass window.
 - b. Predetermined size of window 16" X 24" (made of cardboard or poster board.
 - c. Students are to make up their own design for their windows.
 - d. Use colored cellophane for the stained glass.
 - e. Tape to hold to cardboard. Masking tape to act as the solder in the real window.
 - f. When they have finished their project, have them explain it to class and then exhibit them for others to see.

VI. Suggestion

- 1. Consult art teacher for help and ideas.
- 2. Allow students their own interpretation.

VII. Evaluation

- 1. Did all students finish their projects?
- 2. Are they aware of the art work involved in stained glass?
- 3. Did they ask many questions?
- 4. Did they want to stop the project?

A Spring, In A House?

I. Introduction

In this activity, students will be introduced to a spring house. This activity is designed to stress the architecture, with emphasis on building material, of a spring house. The activity will be centered around the spring house located on the property next to the school. It will be here that they will observe the building and examine the building material that was used in its construction. This activity can be used for students in grades fourth through senior high school. It will require the supervision of the classroom teacher. Time needed will range between 1 to 5 days. The activity is designed to show students how buildings were constructed and what they were constructed of during the 19th century.

II. Questions

1. To lead into the activity:
 - a. What is a spring house?
 - b. What was it used for?
2. To initiate the activity:
 - a. Are there any spring houses in your community?
 - b. Where are they found?
 - c. Have you ever been in a spring house?
3. To continue the activity:
 - a. How did they construct this type of building in the past?
 - b. Are spring houses still used today? Why or Why not?
4. To expand this activity:
 - a. How are buildings constructed today?
 - b. What has taken the place of the spring house?
 - c. What improvements have been made to building materials?
5. To evaluate the activity:
 - a. How did the students respond?
 - b. How did the students work together?
 - c. What knowledge did they acquire about building materials past and present?

III. Equipment

1. Notebook and pencil
2. Old clothes
3. Box or container for tools
4. Tools
 - a. hammer
 - b. brush
 - c. magnifying glass
 - d. small pick (ice pick or screwdriver)
 - e. small paint brush
5. Masking tape
6. Box for samples
7. Small table to place samples on and sort.

IV. Procedure

1. Need permission to go on property and examine spring house.
2. Divide students into working groups.
3. Observe the building.
4. Have students concentrate on the materials used.
5. Student samples:
 - a. section outside for them to examine and record what they have found.
 - b. students take few examples of material.
 - c. examine the material and write down what they have found.
 - d. return most samples to where they found them.
6. Return to classroom.
 - a. in their groups they are to write up a report of what they have found.
 - b. pictures should be included.
 - c. have students compare their results.

V. Evaluation

1. Did they cooperate?
2. Was the spring house left the way it was found?
3. Were all reports completed?
4. Did reports concur or disagree?
5. Are they aware of what a spring house was used for and why they are generally not used today?

EXTREMELY WELL DONE. YOU PROBABLY HAVE SEVERAL HERITAGE ACTIVITIES HERE, ALL WRAPPED UP INTO ONE. IT IS USUALLY DIFFICULT TO GET AN ACTIVITY TO DEAL WITH ONLY ONE LEVEL, BE IT AWARENESS, TRANSITIONAL, OR OPERATIONAL.

Down On The Farm

Introduction

The purpose of this activity is to visit a rural setting and to give an opportunity to children (gr.4-8) in city or residential areas to appreciate, by observation, interviewing and research, something of the rural way of life in the United States in the past.

Materials that may be helpful:

notebook camera tape recorder

A. Questions

1. Who has never visited a farm? Who has?
2. Can we learn about the past by visiting a farm today?

B. Questions that initiate the activity:

1. Are there different kinds of farms or are they all the same?
2. Which kind should we visit to learn about the past?
3. Who knows someone who lives on a farm?

C. Questions that continue the activity:

1. Is farm life the same today as it was yesterday?
2. How is it similar? How different?
 - a. types of tools, machinery.
 - b. kinds of animals, crops.
 - c. types of buildings.
 - d. sounds, smells, hours of work, chores, etc.

D. Questions that expand the activity:

1. Did the farm people of the past work for the same purposes as the farmers today?
2. How will you find information of the past to compare with your present experience?

E. Evaluation

1. Have the students discuss and share their findings in a class period.
2. Have the students write a paragraph or two on what they learned by themselves or from discussion with others. (The extent of the written report or even the substituting of an oral report depends on the age level of the children or the intentions of the teacher).

Bakerman, Bake Me Some Bread!

Introduction

Through a hands-on activity, research and possibly role playing, this activity is intended to give students of grades 4-8 an insight into the time and labor involved in the preparation of certain items that in the past were done at home and now are commercially prepared. Expanded discussion could include such things as cloth and clothing manufacture, canned and preserved foods, etc.

A. Lead into the activity:

1. Where did people of 150 years ago get their bread? (cloth, etc?)
2. How long do you think it took them to make it?
3. Would you like to try to make some?

B. Initiate the activity:

1. What will we need to make our bread? (Elicit a list of basics and ask where and how these things were gotten in the past).
2. Will our bread have the same ingredients as store bread? (Check labels and discuss contents).

C. Continue the activity:

1. Follow a simple recipe with a minimum of ingredients and steps to follow.

D. Expand the activity: (Don't forget reference to cloth and clothing, etc.)

1. How long did it take us to make our bread?
2. Would your family have time to do this every day?
3. How would a woman's schedule of yesterday be different from today?
4. How would life in towns and the whole country be different?
5. Where else could we find information about how these things were done differently yesterday than they are done today?

E. Evaluation

1. Have students discuss their findings from research and interviews and express their opinions from the actual making of bread. WEAK HERE!

Women Have Changed! - Or Have They?

ARE THE ROLES ACTUALLY OUTDATED, OR ARE OUR PERCEPTIONS OF THE ROLES OF WOMEN OUTDATED? THIS IS AN OPEN-ENDED ACTIVITY. IT SHOULD NARROW DOWN TO A CROSS COMPARISON OF TWO SPECIFIC PERIODS OF TIME? SAY, 1700-1725 AND 1975?

For: Upper middle school youngsters

We intend to explore the changing role of women in the United States from 1700 to the present time by playing a game based on "outdated roles" of women in the U.S.

I. Questions and activities

1. To lead into the activity:

- a. Do you think women are living much more openly and freely than they did before?
- b. What evidence supports your findings?
- c. Are you saying that your grandmother lived differently than your mother? What about your great grandmother, etc?
- d. Do you think women should live more openly and freely?

2. To initiate the activity:

- a. Let's play this game. When we play, keep in mind the idea of your feelings on women's roles that you stated earlier. Remember, according to the rules, you are male or female by rolling the dice.

3. To continue the activity - after playing the game:

- a. How did you feel when you were "male" or "female"? Why?
- b. Did you find yourself wishing you were the other sex? Why?
- c. When you finished playing did you change your mind about women's roles today vs. that of 100 or more years ago?

4. To expand the activity:

- a. Who would like to investigate some women who were stereo-typed?* (Give some examples) *=WHAT DOES THIS MEAN?
- b. Compare them with women of the same generation who were not.
- c. Would someone like to design another game whose basic idea deals with women's changing roles? GOOD

What Was It Like Before?

This activity is designed to familiarize the 5-6 grade students with the new nature-protected tract, Cheston-Robbins Park located in Upper Dublin Township. They will study the history of this one site by investigation, interviewing, and observation.

Questions and Activities:

1. To lead to the activity:
 - a. Have you ever wondered what your community was like one hundred or more years ago?
 - b. What sources would you use to investigate this?
 - c. Would a few people volunteer to contact help by writing letters to these sources?
2. To initiate the activity:
 - a. We will have copies of old and new township maps, etc. What can we learn from a comparison of these maps?
 - b. What differences do you note as you compare these resources?
 - c. Why might there be a change in the size of the property?
 - d. Do you recognize any familiar land marks?
 - e. Is the Cheston-Robbins tract on the most recent map? When does it first appear?
 - f. Who owned the property before Cheston-Robbins?
 - g. What boundary changes and changes in ownership are recorded on the old and new maps?
3. To expand the activity:
 - a. Reproduce scale drawings from the earliest and latest maps - clearly mark the nature tract.
 - b. Make a time line noting any significant changes in ownership, boundaries, etc.
4. Concluding Activity:
 - a. overnight camping experience-tenting, etc.
 - b. Use maps to plot points, find water, roads, etc.

TIGHTLY STRUCTURED, BUT WEAK ON CONCLUDING ACTIVITY?
HOW ABOUT CONCEPT OF OWNERSHIP? OF INHERITANCE? THESE
MIGHT BE NEW DIRECTIONS?

Trash Can Archeology

Introduction

This activity is intended to serve as an introduction to the study of the past, using one method of studying the past. The actual doing will take an hour to an hour and a half, including initiating and wrap-up discussions. Have groups of about 5 children each. Recommended for grades 4-6.

Equipment

3 untampered-with trash cans (if 15 children are involved) from 3 different grade-age levels. Keep it a secret where they're from. Collect these baskets in the afternoon just before the activity begins.

Initial Motivation:

Find out through observing and inferring which class the can came from and what the class was doing today.

Before going any further: Discuss the importance of removing the trash carefully and layer by layer.

Questions:

What did you find at the bottom of the can? Why was it at the bottom? What types of objects are found in the can? Are they all of the same material? Who produced it? Was it always the same person? Classify the contents. Think about the society that produced it - Were they wasteful; did they specialize in anything?

TRASH CANS CAN BE USED FOR A VARIETY OF HERITAGE ACTIVITIES, SEVERAL OF WHICH YOU INCLUDED: CONCEPT OF WASTE, CONCEPT OF RESPONSIBILITIES, ETC.

Looking Over The Years

Introduction

This activity shows a way to study local history by doing research using old newspapers. Each week the Ambler Gazette (Montgomery Publishing Co.) carries a reprint from the past issues of the Gazette. The reprint is entitled, "Looking over the Years". The geographic area is the child's local environment; choose a reprint that corresponds to the current month, thus keeping the locale and time of year constant. Grades 5 and 6.

As an example, November, 1904 reprint was chosen. Specific questions refer to this article (enclosed)

Motivation:

Listen to (or read) the article. As you go through it, think how different or similar Upper Dublin was about 70 years ago when your Grandparents were little.

Questions:

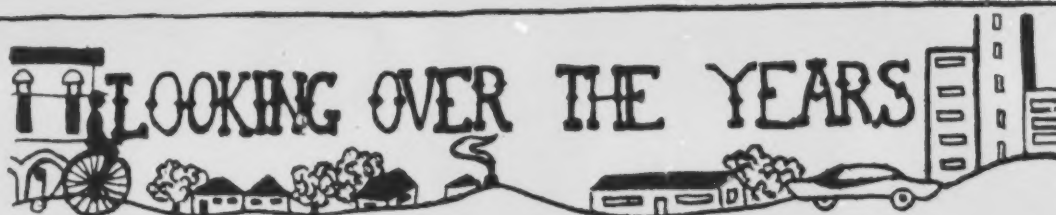
From what was reported in the article, choose a topic (list developed by class) and write what you learned about it. Possible topics: jobs, transportation, wildlife, town problems, recreation, nearby towns.

Relating the past to the present:

With your topic, write a paragraph you could send to the Gazette, dating it November 1975, bringing your topic up to date.

YOU TOOK THE OCCUPATIONS APPROACH. GREAT! IMAGINE THE DIFFERENT DIRECTIONS THIS CAN TAKE.

LOOKING OVER THE YEARS



Reprinted from past issues of The Ambler Gazette

NOVEMBER, 1904

Mr. E.B. Satterthwaite, Horsham, entertained the Thimble club Saturday afternoon.

A.A. Delp, the Lansdale auctioneer, has now cried about 4,500 sales during his professional career of 40 years. He keeps a record of each. His age is about 60, and he is well off financially.

The turnpike bridge at the blacksmith shop in Jarrettown has been rebuilt.

Mrs. Amanda Carn, Fort Washington, is having the Springfield water put into both the house and barn.

A 300-pound pedigreed Berkshire bear will be shot off at Fort Side Inn Thanksgiving day afternoon, and stationary targets will be used, so that each gunner stands an equal chance of getting the animal. Mr. Camblos bred the bear and the animal is a fine one.

Mr. Pierre Camblos is building a forcing house, in which the early vegetables will be started. For this building the earth was excavated, the sides walled up and on this is built a superstructure of frame and glass.

John Detwiler, station agent, and Samuel Burl returned last week after several days gunning up above Williamsport and through the Muncy Valley. They were satisfied in returning with five pheasants. Both are enthusiastic over the trip, but said hunting was very laborious owing to the heavy snow.

Many rabbits have been slaughtered this season at the Sheaff homestead. Mr. Sheaff is always willing to allow legitimate game hunting, but every fair minded person must agree with him when he stoutly protests against the indiscriminate slaughter of pigeons, ducks, chickens, and other poultry about the place.

The low rate ten-day excursions of the Pennsylvania railroad to St. Louis affords a fine opportunity for those who have not yet seen it to visit the greatest exposition ever held in this country. The rate is \$18.50 from Philadelphia.

A question that is causing some discussion is: "When is the proper time to buy Christmas gifts?" One shopper says, "I find that there are more bargains to be had in Ambler the night before Christmas than there are now. One important feature in buying late is that we do not have all our money invested so long before, and the children are not poking about the house to see what has been purchased. I like the rush too". But the dealers say that two or three weeks before Christmas is the best time to buy.

The proprietors of Hall's Catarrah Cure have so much faith in its curative powers that they offer One Hundred Dollars for any case that it fails to cure. Address: F.J. Cheney and Co., Toldeo, O.

The information of deep ruts has been prevented on some of the toll roads of Pennsylvania by lengthening the double-trees on wagons, and by hitching the horses so that they will walk directly in front of the wheels.

Let the man of leisure try the role of the man of action, and he will soon find that labor confers more happiness than laziness.

The Ambler post office will be closed at 10 A.M. on Thanksgiving, and the carriers will make one general delivery.

Mr. Frank Houston and family have closed their Ambler home for the winter and taken a house at Norwood, where Miss Houston is soloist in a Church choir.

Howard, son of Mr. and Mrs. J. P. Eckfeldt, of Lindenwold terrace, Ambler, a member of the faculty of Lehigh University, acted as one of the pall bearers at the funeral of the late president of that institution, Dr. Brown.

Changes in Types of Print

Introduction

Change is ever present in our lives. One change that has taken place is in printing and handwriting. By studying the type of printing on gravestones, the students would get an introduction to this idea. Students in grades three to six could participate in this activity easily. This activity easily lends itself to an in-depth study of writing from prehistoric to present time.

Questions

1. To lead the activity, ask:
 - a. Does everyone write the same way?
 - b. Is all printing the same?
 - c. Is all printing the same even on one letter, newspaper, etc.?
2. To initiate the activity, ask:
 - a. What types of printing do we see today?
 - b. What types of printing were used in your grandparents' day?
 - c. Where could we find some different types of printing?
3. To continue the activity, ask:
 - a. How many types of print did you find?
 - b. What type of print did you like best?
 - c. At what time did the print seem the most fancy?
4. To expand the activity, ask:
 - a. If we found older gravestones, would the print be any different?
 - b. Do you think people's handwriting changed like the printing did?
 - c. DID THE EGYPTIANS PRINT DIFFERENTLY?
 - d. WHERE COULD WE ACTUALLY SEE THEIR PRINTING? (MUSEUM)
 - e. WOULD YOU LIKE TO GO THERE?
5. To evaluate the activity, ask:
 - a. Were the students able to find differences in print?
 - b. Could they group the print within a certain time period?
 - c. Did this activity result in a more concentrated study of the changes in printing?

Equipment

1. Masking tape
2. Crayons
3. Large paper
4. Writing equipment

Procedure

1. Divide the students into groups of two or three each.
2. Instruct the students to find as many different types of print as possible.
3. Take rubbings of the different types of print from the gravestones.
4. Attach a large sheet of paper to gravestone securely with masking tape.
5. With crayon rub the surface of the paper until an impression of the gravestone is made.
6. Remove from gravestone carefully and label decade it was made.
7. Keep groups of print together so comparisons can be made.
8. Meet after a specified time for discussion of findings.
9. This activity could be done in one day or a week depending on your set-up.

The Cemetery as a Classroom

Introduction

Faced too frequently with the dilemma of where to take our students for a field trip, this idea can be a perfect solution. When we add to this novel experiment the all-important factor of little or no cost, it has to be a winner. The activities are limited only as far as the children's imagination permits. In the unique setting of a cemetery the student may experience such diverse activities as those relating to Language Arts, Social Studies, Mathematics, Art, Science and Environmental Studies. Team study should be encouraged and certain goals set to maintain the great enthusiasm the children will exhibit.

Questions

1. To lead to the activity
 - a. Who has ever walked through a cemetery?
 - b. What did you observe?
2. To initiate the activity
 - a. Do you think there is anything we can learn from a cemetery that would be included in our studies?
3. To continue the activity
 - a. How could we incorporate (use) our school-room studies such as Math, Language Arts, Science, Social Studies, Art?

DO FAMILIES SEEM TO BE BURIED TOGETHER? WHO WAS THE OLDEST PERSON? ETC.
4. To expand the activity ask
 - a. Should we work on each activity alone?
 - b. Should we work on each activity in a team?
 - c. Why would team-study be more successful?

COULD A CEMETERY TELL US ANYTHING ABOUT LIFE-EXPECTANCY? ETC.

QUESTIONS IN SECTIONS 3 AND 4 SOUND LIKE INITIATION QUESTIONS, THEY PRECEDE THE ACTUAL ACTIVITY.

5. To evaluate the activity

- a. Was the workbook used as a guide?
- b. Did the students feel a sense of accomplishment?
- c. In the gravestone rubbings did the student bring back samples which could be used in the classroom and aesthetically appreciated?

Equipment

1. Sheet of newsprint, masking tape, crayon for rubbings
2. Workbook or paper, pencil

Procedure

1. Permission for trip from parents, administrators and cemetery manager.
2. Students divided into groups/teams.
3. Activities outlined and explained from workbook - selected for day.
4. All rubbings displayed and workbooks evaluated.

What's There To Know In A Cemetery?

Introduction

A trip to the cemetery for us is going to be a new and unique experience. We will divide into six groups of five to do our team work. Our investigation is to find out all the major things we can learn from a cemetery.

Questions

1. To lead to activity
 - a. How many people in the cemetery have the same zodiac sign as you?
 - b. How many times can you find your family name?
 - c. What was the most popular first name between the years 1925-1950?
2. To initiate the activity ask
 - a. Find out how many families had more than one child die?
 - b. During what years did most children die?
 - c. What do you think was the cause of these childrens deaths?

(ALL THE ABOVE QUESTIONS ARE QUESTIONS TO CONTINUE, AS THEY REQUIRE THE STUDENTS TO BE AT THE CEMETERY AND ALREADY INVOLVED IN THE ACTIVITY.)

3. To expand the activity ask
 - a. Do you think children who die today would have the same major sickness as those who died between the years 1865-1885?
 - b. Could you think of a reason why?
4. Evaluate the activity and ask
 - a. How much of the cemetery were you able to cover for your investigation?
 - b. How was the data recorded?
 - c. What activities did the group pursue?

Equipment

1. Paper and crayons
2. Tape measures

3. Tape

4. Pencils

Procedure

1. Have children select a specific point they were interested in working on.
2. Collect (there) their materials and share their findings with each other.
3. Post all groups activities and evaluate them.

Rubbing Tombstones

Introduction

A cemetery is a place which gives us much knowledge about the environment and its effect on people in different periods of time. Through visiting a cemetery and noticing its appearance we can determine if it is one which is being cared for or being obliterated due to time and/or vandalism.

Equipment

1. Newsprint
2. Large black crayon, tape
3. Notebooks and pencils

Questions

1. To lead to the activity
 - a. Who can tell me what a cemetery is?
 - b. Have you ever seen one?
 - c. When do people visit a cemetery?
2. To continue the activity
 - a. Why do they visit the cemetery?
 - b. Do you know someone who is buried in a cemetery?
 - c. Would you bring anything to the cemetery when you visit it?
 - d. Why would you bring a plant?
3. To continue the activity
 - a. Would anything else need to be done to keep the cemetery looking good?
 - b. Who might do this work?
 - c. How do you know where someone is buried?
4. To expand the idea?
 - a. A cemetery can tell us many things about the people of a given age. In 1850 did the men live longer or the women?
 - b. In the years between 1800 and 1850 did many children die?
 - c. How old do you think the oldest buried man is?

- d. To what age did the oldest buried woman reach?
- e. These and many other facts can be discovered in the cemetery we will visit.

QUESTIONS IN SECTION 4 WOULD BE BETTER IN SECTION 3.
 QUESTIONS TO EXPAND SHOULD SUGGEST NEW DIRECTIONS, SUCH
 AS: COMPARING YOUR 1800-1850 DATA WITH 1900-1950; A STUDY
 OF EPITAPHS; ART WORK WITH RUBBINGS, ETC.

5. To evaluate the activity
 - a. In what kind of condition did we find our cemetery?
 - b. How did you know it was well cared for? What did you observe that brought you to this conclusion?
 - c. Were you surprised to see how many children lived a very short time?
 - d. Why do you think they died so young in the 1800's?
 - e. Did most adults live to an age of 60 or more in the 1800's?
 - f. Can you think of some reasons why they did not attain an older age?
 - g. What was the average age of all the people we recorded?

Procedure

1. Get permission from principal, parents and cemetery to do activity.
2. Secure cars to make trip.
3. Each child is to make a rubbing to bring back to the classroom.
4. Each child is to copy a list of 10 men and 10 women whose birth occurred between 1800 and 1850. Also include birth and death dates.
5. After returning to classroom transfer findings from rubbings to a chart.

Children	Women	Men	Born	Died	Age
X			1805	1806	1
	X		1813	1855	42
		X	1801	1880	79

6. After large chart has been made, have the children attempt to make their own charts from the list they made while at the cemetery of 20 people.

The Cemetery - Is Everything Dead In There?

I. Introduction

All fields of knowledge, all man's endeavors in the arts, crafts, and in the sciences have some relation to the physical and social environment in which he lives. Students with imagination and curiosity will make this discovery for themselves. Others need guidance to help themselves, to broaden their horizons, to acquaint themselves with the wise use of resources, both human and natural. Outdoor training and recreation as well as outdoor education in an appropriate and beautiful setting is taken for granted by many students. An attempt may be begun to create an awareness of the possibility that other segments of the community can be of value in this - the wise use of resources through planning.

Arousing an interest and a concern for environmental quality is of prime importance in this effort. Why conserve? Why treasure? Why husband our human and natural resources only when it is almost a crisis situation? It seems that an approach to developing environmental literacy is as important as an approach to human literacy. One of the ways of equipping children for satisfying lives is to help them to become aware of the local environment. Simple, isn't it? And, a trip to the cemetery can do just that.

Theme: "We are in competition with the Creator, we should be in cooperation." Thoreau

II. Questions

1. To lead the activity,ask:

- a. Have you ever been camping? What did you see? List six natural features you saw.
- b. Have you ever been swimming? What did you see? Can you check any of the six features that you listed in question a? (grass, trees, rocks, stone, sky, plants, birds, etc. Yes, they occur in both places.)
- c. Have you ever been to our cemetery? (This is in a semi-rural area outside town.) What did you see? Does a cemetery have anything in common with a campground, or a swimming area?

2. To initiate the activity,ask:

- a. Are all three of these locations where people have some impact? Do these locations need care and attention?
- b. Is it possible for the actions of people to affect the environment in each of these areas? How? (vandalism, carelessness).
- c. Do all three of these outdoor areas have rules? What kind?

THE COMPARISON OF SITES WELL KNOWN TO THE KIDS SOUNDS LIKE A GREAT WAY TO BEGIN YOUR ACTIVITY.

3. To continue the activity ask

- a. Would you like to visit our cemetery? Since we are a religious school, we have a special care for it. But, we should also realize that a resting place for loved ones is also a most important part of our environment. We can learn from it. Go to the cemetery with your class or with your parents. They may be interested also.
- b. List at least six evidences of life that you observe. Why did you choose them?
- c. Do you believe that any of the following occupations are of value in this cemetery? Why?
 - 1. Botanist
 - 2. Stone Mason
 - 3. Memorial Merchant
 - 4. Horticulturist

4. To expand the activity ask

- a. Did you find evidence of any of the following?
 - 1. Artists (work on stone and arrangements)
 - 2. Printing (lettering)
 - 3. Quotations (epitaph)
 - 4. History (soldiers)
- b. How many were buried between 1920 and 1930?
- c. Did the number increase or decrease from 1930-1935?
- d. Were there any family names recurring?
- e. Did you find trees? What types?
- f. Could you name 3 kinds of plants you found there?

5. To evaluate the activity ask

- a. How is the problem of maintenance of this environment solved? (grass cut, trees trimmed, etc.)
- b. Can you do anything to help maintain it?
- c. What did you notice about the general area that you think might be improved?
- d. Did you notice anything you liked?
- e. Have you any suggestions as to what we could specifically do to improve the quality of this environment? (assume responsibility for a small section to pick up containers? Trash? etc.)
- f. Do you believe that problems may be created by Lexington Court? (a new garden type development and yes, fence has been torn down several times).
- g. Can you suggest any way to deal with possible problems?

h. Has your attitude toward a cemetery changed? How?

III. Equipment

1. Notebook
2. Pencil
3. Camera
4. Tape recorder
5. Black crayons
6. Newsprint paper
7. Tape measure
8. Data repository

IV. Procedure

1. Have students do an "eyeball survey" first.
2. Divide class into teams. Assign each an inquiry.

Team A - look around the cemetery to find if any families are buried with each other. Make rubbings. Record the names, birth and death of 2 families.

Team B - Look on the headstones for epitaphs. Make rubbings of each. Find at least 5 for your team. Did you appreciate the choice of epitaph. Give a reason for your answer.

Team C - Record the ages of birth and death for ten men. Make rubbings of each. Find their average age.

Team D - Follow directions for C. Substitute women for men.

3. Each inquiry will require documented information. These may be obtained by rubbings or drawings.
4. Permit enough time for entire class to decide if documentation is accurate. (This can be completed in school for rubbings.)

V. Limitations

Since this is only an awareness exercise I have not attempted to expand the activity. A "good book" is not enough. A careful listing of factors is important for this exercise. A map might be constructed as an ongoing church project to be continued throughout the year.

YOU SHOULD BUILD THIS UP BY QUESTIONS IN YOUR "TO EXPAND" SECTION.

Who's Who In The Graveyard

In the Upper Dublin area, The Church of the Brethren graveyard on Butler Pike is suggested.

Introduction:

This activity takes place in a graveyard, preferably one that is small, up to 75 graves. Many different activities can occur in a graveyard. This one involves studying the make-up of a family. It will be approached by reading the inscriptions. Permission to visit the site must be secured ahead of time. Age - Grades 4-6, Time - One hour. Materials - pencil and paper.

Questions:

To begin the activity:

What can we learn from the writing (inscription) on the tombstones? Can you find last names that are the same? Why might they be the same? How can we tell for sure? Can you find a group of gravestones belonging to people who are related? List the names of the people in the family group and their connection with others in the family.

With the descriptive list:

How many children are in the family? did any of the children have the same name as one of their parents? How many generations are buried here (grandparents, parents, children)?

Draw a diagram showing the relative size and placement of the stones: Are the children side-by-side? Are the parents always together? Is one stone bigger than another? Try to explain your findings.

SOMETIMES, IT HELPS TO SEPARATE QUESTIONS FROM ACTIVITIES.
SEQUENCE OF ACTIVITIES IS GREAT! CLEVER TITLE.

SOCIAL STUDIES

	<u>PAGE NO.</u>
Reactions To Bicycle Use And Bicycle Trails.....	108
A Study Of Traffic Patterns.....	110
Automobile Traffic.....	112
Gas Consumption.....	114
Impervious Is Perilous?.....	116
Site Analysis.....	118
Developing A Site.....	120
Outdoor Recreation Survey.....	123
Harmony Instead Of Destruction.....	124
Waste.....	127
The Garbage Boom.....	129
Disposal Of Wastes And Sewage.....	133
Let's Get The Litter Bug!.....	135
Playground Litter.....	137
Territoriality.....	139
A Family Energy Survey.....	141
Household Detergents.....	143

Reactions To Bicycle Used Bicycle Trails

- I. This activity is designed to develop an awareness for the need to provide bicycle trails in the township. It would be an intermediate grade activity, but could lead to a fuller use of township parks by all ages. It is hopeful that an extreme awareness by many people would promote the construction of trails connecting communities and the various parks.

II. Questions

1. To lead:

- a. What problems can we list which pertain to riding bicycles?
- b. Why do you consider these to be problems?
- c. How have some of these problems affected you?

2. To initiate:

- a. Where could we travel by bicycle in our township if there were safe trails?
- b. How can we get more information about places to go in the township?
- c. If we had the opportunity to plan trails, what are the other problems needing consideration?

3. To continue:

- a. What are the areas to keep bike trails away from? Why?
- b. What other uses could be made of trails?
- c. How can we find out how much use would be made of bike trails?

4. To expand:

- a. Would other people in your family use bike trails?
- b. Who can help determine the safety problems?

5. To evaluate:

- a. Were they able to relate the information gathered to developing a trail plan?
- b. Were they able to promulgate and promote development of bike trails?
- c. Did they really develop an interest themselves?

III. Equipment

1. Township maps
2. Data on highway traffic

IV. Procedures

1. Ascertain the need for bike trails.
2. Tour township to familiarize students with problems and parks, etc.
3. Determine routes and alternate routes keeping in mind the safety factors.
4. Discuss plans with township officials and police department.
5. Develop map with trails.

FINE ACTIVITY

A Study Of Traffic Patterns

I. Introduction

This activity is designed to make students aware of the traffic problem in and around our school, to collect, process, and evaluate data concerning the problem, to utilize data to make recommendations to the school administration for improvement.

II. Questions

1. To lead to the activity:

- a. Can people solve a problem if they are aware and interested?
- b. Do you think we, as a class, could make people aware of a problem?
- c. How can you make them aware?

2. To initiate the activity:

- a. Is traffic a problem around our school?
- b. Can we make a study of school traffic?
- c. If it is a problem, how can we make the school aware of it?

3. To continue the activity:

- a. Where are the problems?
- b. Are the problem areas affected by weather conditions?
- c. Are the problem areas affected according to time of day?
- d. Are problem areas affected by day of the week?

4. To expand the activity:

- a. How can you make all drivers in and around our school aware of the problem?
- b. How can we make school administration aware of the problem?
- c. Could we make recommendations for improvement?

5. To evaluate the activity:

- a. Are you more aware of the problem?
- b. Are your parents aware?
- c. Did we affect changes?

III. Equipment? SECTION MISSING

IV. Procedure

1. Steps

- a. Make class aware of the problem through class discussion.
- b. Arrange small groups to study one area at different times of the day. (AT DIFFERENT TIMES OF WEEK, UNDER DIFFERENT WEATHER CONDITIONS?)
- c. Move to different areas each week.
- d. Record data - kinds of vehicles - time - number of vehicles - weather - day of the week.
- e. Record on film - the problem areas and make a school display.
- f. Use data - to prepare a flyer to be sent home to parents.
- g. Use data - to make recommendations to school administration.

OVERALL ACTIVITY GOOD (EXPANSION SECTION ESPECIALLY)
PLEASE FOLLOW THE ESTABLISHED FORMAT MORE CLOSELY.

Automobile Traffic

I. Introduction

This activity is a study of how efficiently automobiles which pass by certain points in the township are used. Its grade level application is unlimited; however, some of the younger students may need adult supervision depending on where this activity is done. They also may not be able to graph the data. This can serve as an awareness, math, or social studies activity. It can also serve to lead into an air pollution or energy conservation activity. It is hoped that by observing the efficient or inefficient use of cars by others, the students will be able to make more efficient use of cars when they reach driving age. Students may also learn to walk or use their bicycles more. They may also influence their parents, relatives, and older friends to make more efficient use of their cars or to use them less frequently.

II. Questions

1. To lead to the activity, ask:
 - a. How far must an issue go before someone considers it a problem?
 - b. How are people made aware of problems?
 - c. Why is it necessary to make people aware of problems?
2. To initiate the activity, ask:
 - a. How efficiently are automobiles used in this township?
 - b. How can we find an answer to this question?
3. To continue the activity, ask:
 - a. Does it make a difference where you do your study?
 - b. Does it make a difference what time of the day you do your study?
 - c. Does it make a difference whether you do your study on a weekday or weekend?
 - d. MIGHT THERE BE ANY SEASONAL DIFFERENCES?
4. To expand the activity, ask:
 - a. How do you think you and your family would react to the data gathered in this activity?
 - b. Does the data gathered in this activity have any relation to air pollution?
 - c. Does the data gathered in this activity have any relation to the conservation of energy?
 - d. What action could you and your class take to remedy this problem?

5. To evaluate this activity, ask:

- a. How carefully did they set up the experiment?
- b. How carefully did they collect the data?
- c. How carefully did they analyze the data?
- d. Were they able to suggest any remedies to the problem?
- e. Are students walking and riding bicycles more?

III. Equipment

1. Note paper
2. Graph paper
3. Local map

IV. Procedure

1. Have students pair off with someone who lives near them.
2. During morning or evening rush hours, stand with partner on the sidewalk along a street near your home where commuter traffic passes.
3. Count and record the number of people, including the driver, in each passenger car which passes your point. Record data on tally sheet. Let one person observe and call out the information to the other person to record. Do this for 1 hour.
4. Repeat experiment at different times on the same day.
5. Repeat experiment at the same time on different days. (Include a week day and a weekend)
6. Graph your data (construct several graphs to compare your data)
7. Try to explain any differences you may find.
8. Compare your results to those of your classmates.

A GOOD ACTIVITY IN THAT IT PRESENTS SEVERAL SIGNIFICANT
LEAD-INS TO ADDITIONAL ACTIVITIES.

Gas Consumption

I. Introduction

This type of activity should be useful from the point of view of consumer education as well as environmental education. The price of gasoline as well as its availability will show the wisdom of a survey such as this. It could fit into a survey of transportation or energy. It can be expanded or narrowed at will. The entire class, or a small portion, may participate.

II. Questions

1. To lead to the activity, ask:

- a. What types of transportation are used for a vacation?
- b. Would you use a truck? Why or why not?
- c. Could you use a train, airplane, car, bus?
- d. What means of transportation did you use?

2. To initiate the activity, ask:

- a. How many children used a car to go on their vacation?
- b. What kind of a car was it? (list: make, available room for passengers and luggage)
- c. Was the trip long or short?
- d. How long? (100 miles, 200 miles, 500 miles)
- e. How short? (10 miles, 20 miles, 50 miles)
- f. Ask your father to estimate the number of gallons of gasoline he used.

THIS COULD BE COMBINED UNDER QUESTIONS TO CONTINUE

3. To continue the activity, ask:

- a. Did the students in 4B use cars for their vacations?
- b. What kind of car was it? (list make, available room for passengers and luggage)
- c. Was the trip long or short?
- d. How long? (100 miles, 200 miles, 500 miles)
- e. How short? (10 miles, 20 miles, 50 miles)
- f. Ask their father to estimate the number of gallons of gas he used.

4. To expand the activity, ask:

- a. What type of family cars from 4A travelled over 100 miles? under 100 miles?

- b. Over 300 miles?
- c. Over 500 miles?
- d. Over 1,000 miles?
- e. From 100 to 300 miles?
- f. How many family cars from 4B did the same thing?
Repeat tabulation

N.B. include total gas with each mileage.

5. To evaluate the students efforts, ask:

- a. What type of car used the most gas?
- b. What type car used the least gas? (Can be evaluated in terms of total gallonage and length of trip)
- c. Did any of them use air conditioning?
- d. Do you believe that size of car affects the gas used?
- e. Do you believe air conditioning affects the use of gas?
- f. Did parents have any comment on car performance?

III. Equipment

- 1. Pencil, paper and survey form.

IV. Procedure

Students will work in teams of ten. Each team will provide the following information for each student on the team:
Make of Car/Year of Car/Length of trip to nearest round number/Amount of gallons to the nearest gallon.

I ASSUME 4A & 4B ARE SEPARATE CLASSES. AN EXPANSION MIGHT BE TO ATTEMPT AN ANALYSIS OF OVERALL TRANSPORTATION COSTS (OIL, TIRES, REPAIRS, DEPRECIATION).

Impervious Is Perilous?

I. Introduction

Increasing the surface area of impervious materials such as pavement and buildings puts an added burden on the streams and often results in floodings. This activity is designed to increase students awareness of the effects of development on local streams.

II. Questions

A. To lead to the activity:

1. How are the streams in our community important to us? economically? aesthetically? ecologically?
2. How has the development of our community affected our streams?

THIS IS A CONTINUATION QUESTION

B. To initiate the activity:

1. What changes could be measured in our streams as a result of water run-off? (water level, silt content, erosion of banks)
2. Of what significance are these changes to us? (flooding, rebuilding of retaining walls, bridges, etc., effect on living organisms in the stream, ethetically)

C. To continue the activity:

1. Where do the sources of run-off come from? (In a defined area close to the school)
2. Is there a record of any kind in the township to indicate how our stream has changed as the township developed?
3. What kind of ground cover absorbs rainfall most effectively?

D. To expand the activity:

1. How do streams not affected by excessive run-off compare in regard to level variation and silt content?

E. To evaluate the activity:

1. How accurately was data collected?
2. How was the data compiled and evaluated?

3. What additional information can be gathered?

EXCEPT AT HIGH VELOCITIES, SILT IS NOT SUSPENDED IN WATER; RATHER IT IS ROLLED, BOUNCED, ETC. ALONG THE STREAM BOTTOM; YOUR SETTLINGS MAY BE PARTICLES OF SUB-SILT SIZE, CLAY, AND NOT BE A MEASURE OF ALL DEPOSITION.

III. EQUIPMENT?

IV. Procedure:

1. Walk along this creek bank. Record with a camera evidence of water level fluctuation.
2. Place a stake with elevations marked on it in the stream bed.
3. Take water samples to measure, allow settling, and record silt.
(RECORD WHAT - DEPTH, VOLUME, %, WEIGHT?)
4. Continue measurements of level of silt over a month interval.

YOU MAY ALSO WISH TO MEASURE THE PERCENT IMPERVIOUS SURFACE AREA ON THE WATERSHED UPSTREAM FROM YOUR SAMPLING SITES. (AS WELL AS TOTAL WATERSHED AREA).

WEATHER DATA WOULD BE NEEDED TO DETERMINE PERCENT RUNOFF, THIS COULD BE USEFUL IN PREDICTING FUTURE FLOOD LEVELS AND IN YOUR COMPARISON TO THE UNAFFECTED STREAM.

Site Analysis

I. Introduction

This activity is designed to increase my second graders' awareness of their total school site and, in particular, the outdoor area. It is hoped that through observation of conditions, a stimulating project will be devised in which they can participate to the fullest. We have a wooded area with stream that is part of the playground area, but which has been run down over the years.

II. Equipment

1. Pencils, notebooks

III. Questions

a. To lead to the activity:

1. How many places at school can we use to play outdoors?
2. Which is your favorite place and why?

b. To initiate the activity:

1. Is there any place you would like to improve?
2. What kinds of activities could we do together to make our school site better?
3. Which area could we use some help to develop?

c. To continue the activity:

1. How can we know more about the area we wish to improve?

d. To expand the activity:

1. When we have begun our work, is there some way we can share it with the other children?

e. To evaluate the activity:

1. Did the children work together well?
2. Did they continue to take care of the area they improved?
3. Did their exploration of the site increase their desire to know more about the wildlife in the area?
4. Did their interest promote parental or other community member involvement?

IV. Procedure

1. Take a walking tour of the school site.

2. List the kinds of areas we could work with. (woods, stream, flower beds, picnic area).
3. Take note of the kinds of trees, flowers, animals, wild plants.
4. Note kinds of jobs that could be done to improve the areas. (paint picnic tables, weed flower beds, make a nature trail, etc.)
5. Decide on one improvement and proceed with it.
6. Record all ideas so other groups could become involved once interest is generated from their project.

GOOD STUDENT INVOLVEMENT. YOU MIGHT TRY SOME QUESTIONS TO LEAD THE KIDS TO COLLECT THE APPROPRIATE TYPES OF DATA/ INFORMATION. WOULD A DATA BANK OF RESOURCES AT THE SITE BE USEFUL? WOULD A PRIORITIZED LIST OF IMPROVEMENT SUGGESTIONS BE USEFUL?

Developing A Site

Site: An area of the Beaver Creek School playground, northwest of the building and adjacent to Beaver Creek stream, and a pond on the stream.

Size: Approximately 1/2 acre.

Topography: Fairly level grassy area on both sides of the stream, with a rather sharp, but shallow bank along some portions of the stream.

I. Introduction

This activity is planned for a class of third grade children. It might best be initiated in the late spring and could continue until the end of the school year. The activity would correlate well with the Science program as well as with a study of the local community. The primary objectives of the project would be to arouse the children's interest in and concern for improving their school environment and to make the site more attractive and valuable for all of the students and the community.

II. Questions

A. To lead into the activity, ask:

1. Would you like to make some part of our community look more attractive?
2. What area could we all work on together during the school day?
3. Do you think we could do a more thorough job by limiting the area of the playground on which we work?
4. Have any of you been exploring or fishing in the pond recently? Why doesn't it look very nice?
5. What can we do to improve this site?
6. Did one group do a plane table map of this area earlier this year?
7. What would be a good way to begin this project?

B. To initiate the activity, ask:

1. What kinds of pollution did we find?
2. Besides picking up trash, what can we do to improve this area?
3. What equipment will we need to fix up this part of our playground?
4. Will you want to wear anything special or bring anything from home?
5. What jobs shall we tackle first?

6. How shall we divide the jobs so everyone has a chance to help?
7. Will we want to ask any older kids or adults to help us?
8. Is there anyone we should contact for permission or help?

C. To continue the activity, ask:

1. What could we do to make this a sort of nature learning center?
2. Which of these projects can we do with little or no expense?
3. What could we use to make a path to the pond?
4. Could we make a little footbridge over the stream?
5. Do you know anyone who could help us make a bird feeder?
6. What can we do inside on the rainy days?
7. Would some of you like to go to other classrooms to explain our project?
8. Would you like to write an article for the newspaper telling about our project?
9. Would you like to be a tour guide to show another class what we have done?

D. To expand the activity, ask:

1. Could we plant some new shrubbery along the creek?
2. Would you like to plant a wildlife garden, if we can get permission and seeds?
3. How about studying life in the pond?
4. Would you like to make an aquarium?
5. How many different kinds of insects can we find in and around the water? plants?
6. Who would like to make a relief map of our "new" site?
7. Would you like to take pictures or draw pictures of our site for a bulletin board?
8. Who would be willing to take care of the site during the summer?

E. To evaluate the activity, ask:

1. Were the children enthusiastic?
2. Was everyone involved in the project? Did they work well together?
3. Did we receive cooperation from the rest of the school and the community?
4. Did we accomplish what we set out to do?
5. Was the end result worth the time and effort involved? IS THAT "END" RESULT ATTITUDINAL, EDUCATIONAL, OR PHYSICAL?

6. Did the children gain appreciation for an attractive environment?
7. Will they be more knowledgeable and have greater respect for the outdoors in the future?
8. What new facts, concepts, and skills did they learn?

III. Equipment

The children might want to wear older clothes and high shoes or boots when we work outside. During the planning stages, the only equipment necessary would be paper and pencils for note taking. For cleaning up the site, they would need trash containers, gloves, shovels, rakes, clippers, etc. Developing and expanding the site would require pebbles or wood chips, wood (bird feeder), dirt, shrubbery, and seeds.

IV. Procedure

We would first make a plane table map and survey the area to see just what was there. The survey could include a determination of water quality, types of life in the water, and kinds of birds, animals, insects, and plants in the area. We would also look for signs of soil erosion and flooding. Then, we would make our plans for cleaning up and developing the site. We would need to decide what specific tasks and equipment were needed for the clean-up operation and for the development projects, and then make up some sort of work assignment schedule.

Since we would probably need more adult supervision and help, we would probably ask for parent volunteers or willing "experts" in the community. Because one objective of this project is to improve the site for all of the students in the school, it would certainly be beneficial to publicize what we were doing and seek cooperation from everyone in the school and neighborhood.

THIS IS NOT A SINGLE ACTIVITY, RATHER A BROAD PLAN TO INCORPORATE MANY ACTIVITIES INTO ONE LARGE PROJECT. AS SUCH, IT SOUNDS LIKE A GOOD APPROACH. ONE OF OUR MAIN CONCERNS IS STUDENT INVOLVEMENT AT ALL LEVELS, PLANNING, DEVELOPMENT, AND USE. YOU'VE OUTLINED THAT WELL.

Outdoor Recreation Survey

Introduction

The purpose of this activity is to develop a sampling device to determine to what extent the community engages in outdoor activities and, thus, be in a position to make recommendations for facility planning.

Questions

1. To lead to the activity:
 - a. Do you think outdoor recreation is worthwhile?
 - b. What kinds of outdoor activities does your family engage in? How often?
 - c. Do you think the families represented here in the class are characteristic of our community?
2. To initiate the activity:
 - a. How could we determine the community's attitude toward, and involvement in, outdoor recreation?
3. To continue the activity:
 - a. How much of the community do we actually have to sample to make our survey accurate?
 - b. How can we insure that the sampling will be random?
 - c. What kinds of information are we seeking?
4. To expand the activity:
 - a. What can we do with our data once we have it?
 - b. Are there any community problems or other needs that we can apply this procedure to?
5. To evaluate the activity:
 - a. What percentage of students became involved in the activity and followed through with it?
 - b. How many students wanted to do more studies or take further action with the information they gathered?

Materials: spirit master, paper and duplicating machine.

Procedure: develop the survey and then divide class into teams to carry it out.

NICE IDEA. YOU NEED SOME QUESTIONS TO HELP DIRECT THE STUDENTS' THOUGHTS ABOUT DEVELOPING THE SURVEY INSTRUMENT.

Harmony Instead Of Destruction

Introduction

"In 1850, there were only 4 cities on earth with a population in excess of one million. In 1900, there were 19 of them. In 1960, 141 cities had a population of one million plus.

...If all existing cities - including New York were to retain their present size, to accommodate the new urban millions would require building a duplicate city for each one already dotting the globe. A new New York, Tokyo, London, Rome and Rangoon - all in 11 years."

-Alvin Toffler, N.Y. Magazine 7/27/1970

I have chosen this introduction quote because planners, government bodies officials, all of these constitute a political process, and frequently the method of imposing a plan or rejecting one is completely misunderstood or entirely autocratic. To help a community to articulate its own aims, ambitions, ideals, and to implement these in terms of concrete necessities, seems to me to be a job for the educator. For teacher and student to become community planners, in a very small way, is to allow each to delve into patterns of how people live, how specific features help or hinder this pattern, how man can make physical change - a viable reaction to his environment.

II. Questions

1. To lead to the activity, ask:

- a. How many students have travelled on vacation this year? (tabulate)
- b. What kind of area did you visit? (list areas)
- c. What did you do for recreation? (list activities)
- d. Of those who stayed here at home, what areas did you visit? Where? Recreation? (tabulate & list)
- e. What area did you enjoy in your visit?(the most enjoyable, the least enjoyable). Why?

2. To initiate the activity, ask:

- a. How many students have visited Reeves Park?
- b. Ask & answer question 2-e above for Reeves Park.
- c. How many students have visited our cemetery?
- d. Ask and answer question 2-e above for St. Ann Cemetery. (expect some flak about "enjoying" a cemetery)

3. To continue the activity, ask:
 - a. What could you do in the following areas in Reeves Park? (1) around the bandstand (2) near the Griffin Gun?
 - b. What could you do in the following areas in our Cemetery? (1) near the entrance driveway (2) near the golf course.
 - c. Would it be possible to find any of the following in either place? If so, tell where, specifically, (1) find 5 species of trees (2) design a trail (3) draw 3 plant leaf "samples" (4) find a place to play games (5) grow a wildflower garden.
4. To expand the activity, ask:
 - a. Did you find any evidence of erosion in either location? List 1, if you did.
 - b. What could you do to help your community enjoy Reeves Park to a greater degree? (List 2 things you can do personally.)
 - c. Can you find any insect life in both areas? (list these).
 - d. Can you find any other forms of plant or animal life in these 2 areas? List at least 5 of these.
5. To evaluate the activity, ask:
 - a. Should our community keep Reeves Park as it is?
 - b. Should our community develop a nature trail in Reeves? Where?
 - c. Should our community make rules to forbid certain activities in Reeves? Why or why not? Give examples.
 - d. What can be done to encourage the resources we enjoy in our local areas?
 - e. Answer questions 5-a,b,c,d, in relation to our cemetery.
 - f. What activity can we pursue, as a class, to enhance one or both of these sites?
 - g. Shall we make some suggestions to our pastor, to our principal, to our fellow students, to our town council, concerning these areas? Why or why not?
 - h. If we decide to make suggestions, what would they include?

III. Equipment

Pencil, paper, clip board, cameras, tape recorder, tape measure, meter stick, and string to use as a measuring tool, if necessary.

IV. Procedure

1. Essentially, this activity is to view a familiar environment with new vision and interest. By really looking, we can appreciate what we have, we can see its advantages and disadvantages, we can be encouraged to care for it, to plan for it, to see the environment as a totality-a resource owned by the community, to be used by the community.
2. Each student, alone or in teams, is to be given a specific area to note, to examine, to review. Since this is awareness, each of these should be discussed thoroughly, perhaps applying the same questions to other familiar areas in the immediate vicinity.
3. I should encourage this activity to be pursued by 2 differing age groups - possibly a 4th and then an 8th grade. The viewpoints of each could contribute to an increasing awareness of social development and responsibility on both sides of the age group. (Is there really a "generation gap" when both are vitally interested?) (Can one see the other "viewpoint"?)

I ESPECIALLY LIKE YOUR USE OF MORE THAN ONE AGE GROUP AND THE TIES TO THE LOCAL COMMUNITY. A PRESENTATION TO THE TOWN COUNCIL COULD BE EXTREMELY SIGNIFICANT IN TERMS OF DEVELOPING IN THE KIDS AN ABILITY AND WILLINGNESS TO POSITIVELY AFFECT THEIR COMMUNITY.

Waste

I. Introduction

This activity is designed to bring a second grader to understand what waste is, where it might be found, who should be responsible for its proper disposal. The activity will be a survey of each child's home and then carried into the classroom. Its purpose is to develop the child's awareness to how he contributes to waste and then to think about his responsibility in its proper disposal.

II. Equipment

1. Notepaper and pencils.

III. Questions

a. To lead to the activity:

1. Can you think of anything you would call trash?
2. Why would you call some paper trash?
3. What do you do with your trash?

b. To initiate the activity:

1. Does everyone dispose of his trash properly? Explain.
2. Besides the classroom, are there ever any other places you may have seen where trash was not disposed of properly?
3. What do we call it when papers and other useless things are left lying around?

c. To continue the activity:

1. When you see trash on the floor, the playground, the roadside, does it help our environment?
2. What should be done when you see litter strewn about?
3. What would happen if everyone just threw things away in any place imaginable?

d. To expand the activity:

1. How does your mother feel about things lying all about?
2. Does she try to keep things picked up around the house?
3. If she didn't place the things on the floor, do you think she should be responsible for picking them up?

e. To evaluate the activity:

1. Were you surprised to find how many people in your family left things in the wrong place?
2. Did you notice that people did this in any other place where you were?
3. Who do you think should take care of discarded, useless things?
4. Can you help when someone has been thoughtless?
5. Can you imagine what our world would be like if most people would be careless?

IV. Procedure

1. Have each child make a list of the trash he finds out of place in his home.
2. Write down the name of each item that was found, the room in which it was found, location. (table, floor, chair)
3. Child should then try to find out who placed the item in that spot.
4. Keep a record for 1 week.
5. When the records are brought to class, compile data into a large chart noting the diversity of the trash, place, most left, and who was responsible for same.

IT'S GOOD TO GET LOWER ELEMENTARY KIDS INTO DATA COLLECTION AND ANALYSIS.

The Garbage Boom

I. Introduction

Land - mere surface per person - is one of our nation's 2 or 3 basic resources. "Elbow-room" is one of our inalienable rights - or so we say. But land-surface cannot increase. In fact, our elbow room is shrinking. Highways, landing fields, garbage and trash dumps, all eat away at available land.

In contrast to the acute excitement about air and water, American land use and the disposal of solid waste on, in, around the land, are relatively ignored. Until the problem of the 200,000 plus dumps becomes urgent, we ignore them. When we see, smell or hear them, then we scream..."Do something"! But, what can we do? Garbage accumulates. It is the food remnants, the leavings, the containers (rarely cleaned), the paper, the bags, the dust from our kitchen floor, the whole miscellany of solid and semi-solid objects that we call trash. It tells a story of civilization. Artifacts in museums were the trash of past ages. Half or more will become a public health hazard because of putrescence. Much of the remainder will dissolve naturally.

ONLY OVER EONS OF TIME.

The process, therefore, is one of collection and disposal. The collection is accomplished sometimes. The disposal - ah, "that is the problem".

This exercise is to alert the observer to the variety of solid waste, to the necessities for its adequate disposal, and to the monumental problems it entails. Solutions are not, cannot be provided. Attitudes, however, can be fostered.

II. Questions

1. To lead to the activity, ask;

- a. Can you decide what happens to your old shoes when they are worn out? To your broken thermos? To the spray cans?
- b. Do they accumulate if everyone on your street disposes of them? Where do they all go? (city disposal)
- c. Does all trash follow the same course? (as private disposal). Or, does it really matter? (since both use refuse collectors)
- d. Whether the trash is called garbage, junk, or debris, it's got to "go" somewhere. Does it go

into the ocean? into the atmosphere? into the earth, or on the earth? What do you think?

2. To initiate the activity, ask:

- a. Can you burn leaves in your town? Why, or why not? Can you burn garbage? If not, why not?
- b. Can you dump your used shoes and thermos bottles on South Second Avenue? (no-dump closed and cleaned)
- c. Did you live near the "dump"? Did you like it? Why not?
- d. Shall we permit ourselves to dump our school trash across the street on that open lot?
- e. Shall we permit the Acme to leave its boxes and bags lying around their parking lot? Their store? The street? Why, or why not?

3. To continue the activity, ask:

- a. Let's agree we don't want to empty our school room trash this week. It's too much bother. What happens? Would you like to be in our classroom? Why, or why not?
- b. What happens to your rest rooms when the towel box is not emptied? When the facilities are not cared for?
- c. What would happen if we were to pile all our milk cartons in the playground and keep them for a week?
- d. Suppose we decide to burn all our trash in the school incinerator. Is this permitted? Is it a good idea? Would you like to live on Second or Third Avenues, if we did? How about living in Overlook?
- e. What happens to material in the Phoenixville Iron Co. scrap heap? (observable from CBD area and example of recycling)
- f. What happens to the liquid materials from the disposal plant?
- g. What happens to the solid materials from the disposal plant?

4. To expand the activity, ask:

- a. Are some groups more efficient than others in disposal practices? Prove your statement.
- b. Can you make any contributions toward practical solutions to the problem of litter in the schoolroom?
- c. Can you suggest any practical answers to the problem of street litter in the local business district?

5. To evaluate the activity, ask:

- a. What, in your opinion, is the most serious solid waste problem faced by your school community?
- b. What, in your opinion, are the 3 most serious solid waste problems in your community? Rate them first, second, third in importance.
- c. Who should deal with our school community problem? How?
- d. Have you any suggestions as to what you, the individual, can do positively to assist your town in alerting families to the problems you listed in question b?

III. Equipment

1. Paper
2. pencil
3. tape recorder
4. camera, if desired
5. data collection and repository station

IV. Procedure

Team A - Count the number of waste paper containers in each area on our floor. Measure them. Estimate whether or not they are filled, overflowing, or empty, by 2:30 daily. Check your estimate for a week. Note the type of contents. (paper, bags, etc)

Team B - Do the same for the first floor.

Team C - Follow same procedure for other building.

All Teams - Estimate how many trash baskets for the following in a week, a month, a school year.

1. Your own classroom (homeroom)
2. Grade VII - homeroom - first floor
3. Grade I - homeroom - other building.

Volunteer Team - Count how many trash cans or litter baskets you observe from:

1. Starr & Bridge to Church & Bridge
2. Starr & Church to Church & Bridge
3. Starr Street from Bridge to Church
4. Main Street from Bridge to Church
5. Gay Street from Bridge to Church

Be sure to note the size and location of the trash baskets or cans. Map them, if you wish. Were they full or empty?

NOTE: If notes were kept and compared at weekly intervals on

procedure over a 3 month period, student could gain some perspective on the continuing problem of waste management for the entire community, as well as expanding his awareness of problems in his school community.

VI. Limitations

Activity is to be limited to comparison and contrast with immediate experiences in school and in shopping district area. It should be kept to this, so that student can begin to realize that "let George do it" isn't the answer - he, the individual, is equally responsible.

VII. Bibliography

The Art of Managing the Environment - Ford Foundation
1974
Pollution Control - U.S. Gov't, Pub. & N.A.M. 1973
Story of Environment and Industry-Am. Iron & Steel Inst.
The Sanitation Man - F. Klogsbrun 1972

GOOD ACTIVITY

Disposal Of Wastes And Sewage

Introduction

One of our goals should be to have sufficient and clean water at the right place and at the right time.

Water shortage at times is not the result of droughts, but of pollution by industrial and human wastes. Some of these wastes are harmless, some dangerous.

Questions

1. To lead to the activity, ask:
 - a. What method does our township use to get rid of waste materials?
 - b. Where are our sewage treatment plants?
 - c. Does our township have any problems with sewage? If so do we then have inadequately treated wastes being emptied into our waterways?
 - d. What are the sewage problems we might have?
2. To initiate the activity ask
 - a. How would we know if a problem existed?
 - b. Who has any responsibility for our wastes and sewage problem?
 - c. Have they any suggestions that could help in controlling the problem?
3. To continue the activity ask
 - a. How are the following involved in the problem?
 1. industry
 2. community
 3. garbage disposal
 4. sanitation men
 5. scrap and metal dealers
 - b. What kind of action do they take after being made aware of the problem?
4. To expand the activity ask
 - a. How do those involved view the problem?
 - b. How is sewage handled in heavily populated areas in the country?
 - c. Explain systems that can be used
 - d. What about areas where there is no sewage system?
 - e. HOW CAN WE AFFECT THE CONDITIONS WE FOUND?
 - f. CAN WE MAKE CHANGES TO IMPROVE THOSE CONDITIONS?

5. To evaluate the activity ask

- a. How well did you investigate the problem and how extensive was the investigation?
- b. How effective were our letters and phone calls to those involved?
- c. How did we relay our data to those involved?
- d. What activities did the children perform as a result of this?

Procedure

1. Have children select one of the issues and report on it.
2. Write letters and contact people connected with our problem.
3. Ask if anyone wishes to contact a resource person to give us information about physical, chemical and bacteriological examination of water.
4. Ask if someone would like to find out about any diseases which could be caused by contaminated water.
5. Do simple purification experiments together. (this is for children who are slower and could not do the above)
MIGHT BE AN EXPANSION ACTIVITY FOR ALL.

Let's Get The Litter Bug!

I. Introduction

This is not an original idea for an activity, but I think it is an effective idea if it is an ongoing process (a project that is continued throughout the school year.) One experience of cleaning up the school will give the children an awareness of the problem of litter, but they must also be impressed with the idea that it takes more than one day of mass clean-up to keep an environment litter-free.

II. Questions

1. To lead the activity, ask:

- a. Who knows what a "litter bug" is?
- b. Why is a "litter bug" harmful to a community?
(a school) (a neighborhood)
- c. Are we "litter bugs" sometimes?

2. To initiate the activity, ask:

- a. Even if we, ourselves, don't (or try not to) litter, is litter still our problem? Why? Why not?
- b. What can we do to stop the messes that "litter bugs" make?
- c. Where should we, as a class, begin our clean up project?

3. To continue the activity, ask:

- a. Where will we put the litter that we find around the school?
- b. What kind of litter do you think we will find?
- c. Do you think we have enough trash cans in our school?
- d. Are they placed in convenient places?

4. To expand the activity, ask:

- a. Would you be able to conduct a clean-up campaign on your own block?
- b. Could you report to us what kind of litter you found there?
- c. Could you talk with your neighborhood friends about keeping your neighborhood clean?

5. To evaluate the activity, ask:

- a. How effectively did the children clean up the school?
- b. What effect did this project have on the other students in the school?

- c. Several weeks after the initial clean-up campaign, were the children still concerned about picking up litter?

III. Equipment

1. Bags to carry around the school for the deposit of litter.
2. School trash cans.

IV. Procedure

1. Discuss the term "litter bug" and how a "litter bug" adversely affects our environment.
2. Discuss how we can stop the "litter bug".
3. Assign the students certain areas of the school (inside and out) that they can clean up.
4. Give them bags for carrying the litter until they reach a trash can.
5. Encourage the children to carry out the same general procedure in their own neighborhoods.
6. Have the children report back to the class regarding how their neighborhood projects are going.

BESIDES ACTUALLY CLEANING UP, COULD THE STUDENTS MOUNT AN INFORMATIONAL CAMPAIGN OF POSTERS, ANNOUNCEMENTS, OR NEWSPAPER ARTICLES?

Playground Litter

I. Introduction

This is an awareness level activity designed to help first grade children become more aware of litter around their home, classroom and school. They should also become more responsible for keeping these areas free of litter.

II. Questions

1. To lead to the activity, ask:

- a. What can we find on the floor around the classroom?
- b. Do you think we would find the same kind of litter on the playground?

2. To initiate the activity, ask:

- a. How could we find out what is on the playground?
- b. What kinds of litter have we found on the playground?
- c. Who was responsible for it being there?
- d. Does this litter look nice?

3. To continue the activity, ask:

- a. What could we do to keep our playground looking as nice as it does now?
- b. Can we get help from others?
- c. How could we get this help?

4. To expand the activity, ask:

- a. Could we do the same thing in the whole school?
- b. Would we be able to find litter in our home?

5. To evaluate the activity, ask:

- a. Did the children learn what litter was?
- b. Could the children find litter?
- c. Have the children become more responsible for keeping places free from litter?

III. Equipment

1. Litter bags
2. Playground

IV. Procedure

1. Have the children look around the classroom for litter.

2. Take a walk outside on the playground.
3. Collect any litter on the playground.
4. Discuss the causes of litter.
5. As a weekly activity, collect the litter in the school and on the school grounds.

A MATH TIE MIGHT BE TO MEASURE THE AMOUNT OF LITTER (VOLUME, WEIGHT, NUMBER OF PIECES, ETC.). KEEPING CHARTS OR GRAPHS OVER THE WHOLE YEAR COULD SHOW YOU HOW EFFECTIVE YOUR EFFORTS WERE.

Territoriality

- I. This activity is designed to make students aware that every animal must have a certain amount of space that can supply its needs for food, shelter and space to rear its young. This could be related to problems in social studies dealing with the "turf" of gangs or problems of city living and over-crowding in general.

II. Questions

1. To lead to the activity:
 - a. How much space do you need?
 - b. Do you have a territory?
 - c. What must your territory provide for you?
 - d. Do your pets have territories?
2. To initiate the activity:
 - a. What life necessities must the ant's territory provide it?
 - b. What kind of information should we collect to study the territoriality of ants?
 - c. How can we map the ant communities in a given area?
3. To continue the activity:
 - a. What seems to determine the size of the ants territory?
 - b. What happens if a single ant strays into the territory of another colony?
 - c. What might happen if an entire colony of ants were moved into another colony's territory?
4. To expand the activity:
 - a. How big is the territory of a rabbit? a mouse? a wolf? a bear?
 - b. What seems to determine the size of an animal's territory?
 - c. Do human beings have territories?
 - d. How is the gang's turf related to the need for a territory?
5. To evaluate the activity:
 - a. How carefully were observations made and recorded?
 - b. Was the area mapped well enough that it could be returned to for further study?
 - c. Could the information be related to studies of the territoriality of other animals?

IV. Procedure

1. Find an area that has numerous ant hills.
2. Map the area in some manner.
3. Make observations about where the ants go. What they carry to or from their colony, how they behave when they are near the territories of other ants, etc.

SOUNDS LIKE IT COULD BE FUN.

A Family Energy Survey

I. Introduction

The reality of brownouts in large U.S. cities is justification enough to urge all American families to examine their consumption of energy. By exposing students to a list of their families' electric appliances, this activity can give an increased appreciation of electricity. By simulating a situation of rationed energy, this exercise will lead students to rank the importance of their various "energy-users".

II. Questions

A. To lead to the activity:

1. What's a brownout?
2. Why would one happen?
3. Could we do anything to add to or lessen the chances of a Philadelphia area brownout? What?

B. To initiate the activity:

1. What appliances (define this) does your family use?
2. Which ones do you have to have?

C. To continue the activity:

1. Could any of these electric jobs be done by muscle power? Which ones?
2. Are any of these jobs done better by electric appliances? Which ones?

D. To evaluate the activity:(AFTER ACTIVITY)

1. How do you rank yourself as to your energy use? (on scale of 3 choices)
2. How do you rank your family? Why?

E. To expand the activity:

1. How can we help other families survey their energy use?
2. Who would be interested in surveying another family in your neighborhood?
3. How may these families feel? How should we act?

III. Equipment

1. Pencils
2. Dittoed survey sheet

Appliance	0-5 hrs. a week	6-10 hrs. a week	More than 10 hrs. a week
	APPROXIMATE TIME USED		
Heater			
Stove			
Refrigerator			
Lights			
Vacuum			
Etc.			

IV. Procedure

A. Survey

1. Have students complete survey at home, encouraging parents to participate (via a cover letter).
2. Discuss results in class, (3 days later) encouraging students to sort out luxury, convenience and necessary appliances.
3. Tell students they're in a community whose electric use is rationed. They can use only 15 appliances a week - what ones will they use? Decide in groups of 3 or 4.
4. Discuss results.

WILL THE STUDENTS DEVELOP THE LIST OF APPLIANCES THEMSELVES? HOW CAN YOU DIFFERENTIATE BETWEEN HEAVY ENERGY CONSUMERS (EG. STOVES, HEATERS) AND LIGHT ENERGY CONSUMERS (EG. CLOCKS, RADIOS)?

Household Detergents

Introduction

One of the problems we face concerning our environment is the huge amount of detergent finding its way into our streams. The purpose of this activity is to determine how much detergent a family uses and then if this amount could be reduced.

Question

1. To lead to the activity:
 - a. Do we have any stream in our community that functions for recreation, such as fishing, boating, etc.?
 - b. What's wrong with our streams?
 - c. What kinds of substances damage a stream?
 - d. Where do these substances come from?
2. To initiate:
 - a. Do families actually use far more detergent than is necessary?
3. To continue:
 - a. How can we determine how much detergent a family uses?
 - b. How can we determine what the proper amount is?
 - c. How can we get households to cut back, if they are using too much?
4. To expand:
 - a. What other environmental problems can we apply this procedure to?
 - b. Is our information worth distributing to the rest of the community? to other communities?
 - c. How do we distribute the information?
5. TO EVALUATE?

Materials: Volume measuring device.

Procedure: To be established by students (after measuring amount used-try a reduced amount)

GOOD SERIES OF QUESTIONS "TO EXPAND" THE ACTIVITY. YOU SHOULD USE THE "TO EVALUATE" SECTION TO GIVE YOU SOME IDEA OF THE IMPACT OF THE ACTIVITY AS WELL AS POSSIBLE WAYS TO IMPROVE IT.

SCIENCE

	<u>PAGE NO.</u>
Snow Survey.....	146
Our Interesting And Changing Weather.....	148
The Study Of Air Pressure.....	150
The Concentration Of Particulates In The Air.....	152
The Effects Of Air Pollution On Vegetation.....	154
Ask The Creepy Crawlers,They Know.....	156
A Model Lake.....	158
Erosion Destroys.....	160
A Marble Orchard.....	162
Polyethylene Bag Composting.....	164
How Do Earthworms Change The Soil?.....	166
Life In One Cubic Foot.....	168
Vegetation And The Environment.....	170
Litter Gardens.....	171
A Study Of A Tree Stump.....	173
Succession In A Field.....	175
Developing A Simple Key For Identifying Common Trees.....	177
Living In A Cemetery.....	179
Tangleboards.....	181
Where Does The Energy Go?.....	184

Snow Survey

I. Introduction

Snow can be used to compare the relative amounts of sulfate and chlorides in the atmosphere. In this investigation, students not only gather data from their own community, but are encouraged to establish correspondence with a student in a different locale in order to make a comparison.

II. Questions

1. To lead to the activity:

- a. How pollution-free is the air in our township?
Is there still cause for concern?
- b. Is our air cleaner than most?

2. To initiate:

- a. How could we measure air pollution without any expensive equipment?

3. To continue:

- a. What other places could we compare our data with?
- b. How might we obtain data from these other locations?

4. To expand:

- a. How do these pollutants affect plant and animal life?
- b. What are the sources of these pollutants?
- c. Are there other air pollutants with which we should be concerned? Could we measure these?

5. To evaluate:

- a. How many students took the trouble to contact another person and follow through in the investigation?
- b. What kind of response did we get from other students?
- c. Do the students wish to expand the study?

Materials

Filter paper, balance, 5 one liter beakers, 10 ml. of IN Ba Cl_2 ,
1.0 ml of IN AgNO_3 .

Procedure:

1. Give students two copies of instructions to measure the amount of sulfate and chloride materials in snow. One copy is for them, the other for another student in a different locale. Tell students to compose a letter explaining what we are doing and send it to someone else (c/o the science department of another school, if necessary).
2. Specific Instructions
 - a. Collect 5 liters of snow and melt. Filter, dry, weigh to determine particulate matter (soot, fly ash, etc.). Save the filtrate.
 - b. Boil the remaining filtrate until a volume of 20 ml. remain. Divide this into two 10 ml. parts.
 - c. In order to determine the mass of sulfate materials resulting from pollution, complete the following:
 - (1) Add 10 ml. of IN BaCl_2 . (barium chloride) to 10 ml. from step #b.
 - (2) Weigh a piece of filter paper and record the mass.
 - (3) Filter the residue (if any) from step c.(1). Wash in 5 ml. distilled water.
 - (4) Dry filter paper and residue at 100°C .
 - (5) Determine mass of filter paper and residue, when cool.
 - (6) Subtract the mass of filter paper (step #C2) from the mass of dried filter paper and residue (step #C4) in order to obtain the mass of sulfate materials found in 2.5 liters of snow.
 - d. In order to determine the mass of chloride materials resulting from pollution complete the following:
 - (1) Add 1.0 ml of IN AgNO_3 (silver nitrate) to the other 10 ml. of filtrate.
 - (2) Continue this portion of the investigation as you did with steps #C2, 3, 4, 5, and 6, but finding this time the mass of chloride materials found in 2.5 liters of snow.
 - e. Gather data and mail results and thanks to all participants.

SOUNDS LIKE AN EXCELLENT WAY TO GATHER COMPARITIVE DATA.
WORKING WITH MAPS, COULD THE STUDENTS PLOT AIR SHEDS, CON-
CENTRATION CONTOURS, OR SIMPLY COLLECTION SITES?

Our Interesting And Changing Weather

I. Introduction

This on-going awareness level investigation is designed to help first grade children become more aware of the weather and lead them to become better observers. It will also involve record-keeping of a very simple form. Each child will be measuring temperature, observing the conditions of each day (rain, sun, wind, snow, etc.), keeping records of these observations, and finally, comparing the monthly records to see any simple weather patterns which may occur.

II. Questions

1. To lead to the activity, ask:

- a. How does the sun make us feel?
- b. What do we think when we see a sky full of big, black clouds?
- c. How could we describe rain to someone who has never seen it?
- d. What is the difference between rain and snow?
- e. What happens to snow when the wind blows?
- f. What does it feel like outside when it snows?
- g. What does it feel like outside now?

2. To initiate the activity, ask:

- a. How could we find out exactly what the temperature outside is now?
- b. If it is 92 degrees outside, is it hot or cold?
- c. How could we find out if it is windy?
- d. If the pinwheel turns, does this mean there is wind?

3. To continue the activity, ask:

- a. What could we do to remember the temperature for every day for the rest of the year?
- b. What pictures could we use to describe other kinds of weather, like;
 - (1) sunny
 - (2) rainy
 - (3) snowy
 - (4) windy
 - (5) cloudy

4. To expand the activity, ask:

- a. Looking at all the monthly charts, how could we decide which months were the warmest and coldest?
- b. Which months had the most rainy days? sunny days? windy days? cloudy days?

- *c. This activity might well expand into a study of types of clouds.
- *d. A rain gauge and an account of precipitation may also follow.

* SHOULD BE QUESTIONS.

5. To evaluate the activity, ask:

- a. How accurate were the temperature measurements?
- b. Were the temperature readings taken at the same time every day?
- c. Were the monthly comparisons made correctly?

III. Equipment

- 1. Thermometers for each child.
- 2. Calendars - one for each child for each month. This should have empty blocks big enough for writing and drawing small pictures.
- 3. Appropriate writing implements.
- 4. Pinwheels for each child.

IV. Procedure

- 1. Have each child read the outdoor temperature on a thermometer.
- 2. Find the appropriate box for the day on the monthly calendar.
- 3. Write the temperature in the box.
- 4. Hold up the pinwheels to check for wind.
- 5. Record the symbol for "windy", if needed - in the same box.
- 6. Record any other symbols needed; sunny, rainy, snowy, cloudy, etc.
- 7. Make simple weather comparisons of the months.

GOOD ACTIVITY, I LIKE THE IDEA OF DRAWING DESCRIPTIVE PICTURES. IS CENTIGRADE VS. FAHRENHEIT TOO MUCH TO TACKLE?

The Study Of Air Pressure

The following is a suggested activity on air pressure which can be done as one part of a minicourse study on weather.

Questions that lead to the activity:

1. If air particles expand or move farther apart when heated and move closer together when cooled, how would you expect air to behave over a hot surface?
2. How would you expect air to behave over a cool surface?
3. What do you think will happen to the weight of a cubic foot of air as it got warmer and its particles moved farther apart?
4. What do you think would happen to a cubic foot of air as it cooled and its particles contracted?
5. We also know that the higher up in the atmosphere we go the cooler temperatures become. How would this affect a cubic foot of warm rising air?

Questions that initiate the activity:

After constructing the homemade barometer, ask the following:

1. What do you think would happen to the rubber covering if the forces of pressure outside were greater than the pressure inside?
2. How would the pointer move under these conditions?
3. What do you think would happen to the rubber covering if the force or pressure inside were greater than those outside?
4. How do you think the pointer would move under these conditions?

Questions that continue the activity:

1. Place the two jars on a dark surface outside (such as asphalt) and let it remain here for a few minutes. What happens to the rubber covering?
2. What happens to the pointer?
3. Is there more pressure inside or outside the covered jar?
4. Place the jars in a shaded area for several minutes. What happens to the rubber covering?
5. What happens to the pointer?
6. Is there more pressure inside or outside the covered jar?

Questions that expand the activity:

1. Try placing the two jars on other surfaces such as different colored cars, grass covered surface, sand

- (light colored) surface, and dark colored soil. Record what happens over each area and compare the results.
2. Try the same over wet surfaces. Compare these results with the dry surface areas.
 3. If we can visualize each square foot of earth surface as being at the bottom of a column of air, and that as we go up this column of air, the number of air particles decreases with increasing altitude, how would our barometer behave at the top of a tall building as compared to the seashore?
 4. If you were to take a small plane ride, record the movement of your barometer's pointer from takeoff to landing, and plot a graph of these readings versus altitude, what would your graph look like?
 5. What would a similar graph of temperature versus height look like.
 6. What are some of the ways that you think barometric pressure might affect our weather?

Questions that evaluate the activity:

1. How could we calibrate our barometer?
2. What must we keep constant to avoid errors in calibrating our barometer?
3. What are some of the things that could go wrong and throw off our calibration?

Equipment Needed:

2 baby food jars, 2 or 3 rubber bands, tongue depressor, balloon, straw, tape

Procedure:

1. Construct the homemade barometer by stretching a broken balloon across the mouth of an empty baby food jar and attach it securely in place with a rubber band. Be sure there is an air tight seal and that the balloon top is flat.
2. Cut one end of a straw at an angle to make it into a pointer and attach the blunt end of the straw to the center top of the balloon membrane.
3. Attach a tongue depressor to a second baby food jar with one or more rubber bands.
4. Place the two jars side by side on a level support so that the point of the straw is directly in front of the tongue depressor. Mark a short line on the tongue depressor at the point of the straw and label it "0" to show the starting position.

ONE POINT OF THE QUESTIONING FORMAT IS TO STIMULATE AND HEIGHTEN STUDENT INTEREST IN AN ACTIVITY. ANOTHER IS TO HELP THE STUDENT DEVELOP HIS ABILITIES AT PROBLEM-SOLVING. SAVE YOUR PROCEDURAL SUGGESTIONS FOR THE PROCEDURE.

The Concentration Of Particulates In The Air

I. Introduction

Air pollution is an issue that has been before us in the last ten years more than ever. This activity is to help students, grades one through three, become aware of this problem. By going out and rubbing the leaves in the school area, the students can see the concentrations of particulates in the air and possibly give a reason for these concentrations. This leads into finding causes for air pollution.

II. Questions

1. To lead to the activity, ask:
 - a. What is air?
 - b. How is air important to us?
 - c. What is pollution?
 - d. What is air pollution?
 - e. Is air pollution a problem?
2. To initiate the activity, ask:
 - a. Do we have a problem with air pollution?
 - b. What is a problem?
 - c. How can we find out if we have a problem with air pollution?
3. To continue the activity, ask:
 - a. What did smudges on the paper show?
 - b. Where did we find more dirt on the leaves?
4. To expand the activity, ask:
 - a. Why did we find more dirt in certain places?
 - b. What would be a reason for this dirt?
5. To evaluate the activity, ask:
 - a. Were the students able to see areas of concentrations of particulates?
 - b. How did the students react to the smudges?
 - c. What activities did the students engage in as a result of this activity?

III. Equipment

1. Several sheets of white toilet tissue or facial tissue.

2. Plants in various areas outside.
3. Writing equipment for labelling.

IV. Procedure

1. Divide students into groups of two or three.
2. Hand out several sheets of tissue to each group of students.
3. Have students go outside and rub the tops and bottoms of leaves with the tissue.
4. Make sure the students take samples from various areas within the boundaries you set up.
5. Bring findings back to a localized point.
6. Hold discussion of findings to determine the particulate concentrations.

The Effects Of Air Pollution On Vegetation

I. Introduction

Air is necessary for man's survival. At one time, it was thought to be an endless supply. As time has passed, we find this natural resource being defiled and polluted by man. Since air is necessary to sustain life on earth, this pollution of air by particulates is indeed serious. Having once established the fact that man is dependent on vegetation, it is important to look into the problems caused by this air and its effect on vegetation.

Making our children aware of this danger by investigating and discussing methods to control pollution at the sources should be our goal. Perhaps in our time, if enough people care, we can preserve our atmosphere for future generations.

II. Questions

1. To lead to the activity, ask:

- a. Can we see air?
- b. What is moving air?
- c. What results can we see that let us know there is wind?

2. To initiate the activity, ask:

- a. Does air/wind contain any impure particles?
- b. Where would these come from?
- c. What are some examples of polluted (impure) air?
- d. Do you think this is harmful to people?
- e. Do you think this could be harmful to plants as well as people?

3. To continue the activity, ask:

- a. How are we dependent on plants?
- b. How might polluted air affect plants?
- c. How could we discover how they are affected?

4. To expand the activity, ask:

- a. Where would we look to find trees and plants so affected?
- b. How could we test the leaves to find the harmful results?

PROBABLY BETTER AS QUESTIONS TO CONTINUE. QUESTIONS TO EXPAND SHOULD LEAD THE KIDS TO FURTHER ACTIVITIES OR INTO DIFFERENT DIRECTIONS.

5. To evaluate the activity, ask:

- a. Did the children compare different areas - near roads, streams, factories?
- b. Was the data gathered stating location, height, distance?
- c. What conclusions were formed?

III. Equipment

1. White paper for leaf rubbing.
2. Notebook, pencil for recording data.

IV. Procedure

1. Children select particular sites of varied locale.
2. Rub alternate sides of leaves to discover where the greater number of particles occur.
3. Choose a day following a period of dry weather, negating chance of rain - wash.
4. Record data and evaluate discoveries on the deleterious effect of air pollution on plants.

Ask The Creepy Crawlers, They Know

Sampling the water for aquatic, live organisms to check for pollution damage.

I. Introduction

Water is so available, so taken-for-granted, we may fail to see it for the remarkable liquid that it is. Without water life would not be possible. We would have no flowers, no trees, none of the hygienic or recreational uses we now employ water for.

Yet with this great importance we can attach to this unique natural resource we are finding that man, through selfishness or carelessness is polluting these God-given streams, rivers, seas.

To alert children to the dangers which exist if this practice continues a field trip to a stream in the community will be planned. Children will be guided to sample the water for aquatic organisms. Perhaps another trip may include the examination of a polluted stream where all aquatic life has been destroyed. In this manner comparisons could more easily be made.

II. Questions

1. To lead to the activity ask

- a. What are some uses for water?
- b. What would happen if suddenly all water was polluted?

2. To initiate the activity ask

- a. How does water become polluted?
- b. What would happen to living organisms in this water?
- c. What kind of organisms do you think you might find in a stream?

3. To continue the activity ask

- a. How do you think we could identify these organisms if we don't know their scientific names?
- b. Where in the stream would you most likely find these "creepy crawlers"?

4. To expand the activity ask

- a. What would it tell us if there were few species in our sampling?

- b. What would it tell us if there were many species in our sampling?
- c. How would we go about collecting this data?

(ABOVE 3 QUESTIONS BETTER AS QUESTIONS TO CONTINUE)
EXPANSION QUESTIONS MIGHT DEAL WITH THE OTHER TRIPS YOU SUGGESTED

5. To evaluate the activity ask

- a. Did we utilize many different niches of the stream?
- b. Did we categorize the organisms according to size, color, number of legs, ie. with its own species?
- c. Was the data collected carefully, keeping number of organisms as well as number of species?
- d. Did we determine the extent of pollution (if any) in the water?
(ONLY POSSIBLE IF YOU SAMPLE ABOVE AND BELOW AN EFFLUENT SITE, OR IF YOU SAMPLE OVER A PERIOD OF TIME, YOU ALWAYS NEED SOMETHING TO COMPARE YOUR DATA TO.)

III. Equipment

- 1. Paper - pencil to record data
- 2. Tray containing several containers to collect organisms.
- 3. Tweezers to extract organisms from rock etc.

IV. Procedure

- 1. Have students in groups with equipment.
- 2. Examine water, rocks, etc. for organisms.
- 3. Collect organisms and record data.
- 4. Determine condition of water as a result of pollution, if any.

A Model Lake

I. Introduction

This activity is designed for the junior high school level. Its purpose is to give students an opportunity to study some factors that affect our waterways by duplicating simply and by making simple measurements of temperature changes resulting from solar heating and wind factors. This activity would probably be most useful in an area where there are no easily accessible waters to study.

II. Questions:

A. Leading into the activity:

1. Why do people like to have a lake near their home or cottage?
2. What else can you do in or on a lake?
3. Do you like to swim in, fish in or sail on a lake or stream?
4. Give some reasons why waterways are important.

B. Initiating the activity:

1. Since waterways and lakes are so desirable, what can we study about them in an effort to learn how to preserve them? (life forms, factors that increase or decrease populations)
2. Can we make a model lake that will duplicate some of the factors that affect its inhabitants? What factors can we duplicate or test?

C. Continuing the activity:

1. Which factors do you think we could test best and most effectively?
2. What kinds of materials will we need to test the effects of solar radiation and wind on the temperature of waterways?

D. Expanding the activity:

1. What factors could we test on a real lake?
2. Where do you think we could write for information on those things we were not equipped to test?

E. Evaluating the activity:

1. Have students compare and discuss possible reasons for data. Applying information to natural waterways, discuss the possible effects on natural inhabitants of waterways.

2. What differences and/or similarities did you find in the data?
3. What reasons or explanations can you give?

III. Materials

1. Large pan filled with water to represent the lake.
2. Thermometer.
3. Fan
4. Large bulb or heat lamp.

IV. Procedure

Many variations or starting points are possible for taking temperature readings:

at various depths after allowing water to stand for 1/2, 1, 2 hours, etc; after exposure to heat for 1/2, 1, 2 hours; after fanning for 1/2, 1, 2 hours; with both fan and lamp on for 1/2, 1, 2 hours.

FROM OUR POINT OF VIEW, GETTING INTO THE "REAL" ENVIRONMENT IS OF PARAMOUNT IMPORTANCE.

Erosion Destroys

I. Introduction

Soil erosion is of vital importance to everyone. Food shortages are becoming more prevalent. We need to find ways to save our soil for food growth. This activity is good for all ages, but this particular one is gauged for grades one through three. This leads on to soil study in more detail. Children must become aware of this problem now.

II. Questions

1. To lead to the activity, ask:

- a. What is soil?
- b. What do we use it for?
- c. Is it important to us?
- d. How is soil important to us?

2. To initiate the activity, ask:

- a. What happens to soil during a hard rainstorm?
- b. Have you ever seen streams or gutters after a rainstorm?
- c. How does it look?
- d. What does a garden look like after a hard rainstorm?
- e. Shall we see what the soil looks like after the rain?

3. To continue the activity, ask:

- a. What did the ground look like?
- b. What caused the gullies?

4. To expand the activity, ask:

- a. Where did the soil go?
- b. How could we keep the soil from washing away?
- c. Suppose the soil all would wash away, what would happen?

5. To evaluate the activity, ask:

- a. Were the children able to find and identify areas of erosion?
- b. Were the children able to come up with some solutions to the erosion?
- c. Were the children able to tell where the soil went and if it had use there?

d. What activities were followed by the children?

III. Equipment

1. Writing material

IV. Procedure

1. Divide class into small groups of three or four.
2. Instruct them to look at the soil and record what they found.
3. Have them return to a given location after a set time to discuss findings.

IS YOUR EXPANSION SECTION DESIGNED TO GET THE STUDENTS TO INITIATE ACTION TO SOLVE EROSION PROBLEMS? IF SO, COULD FURTHER ACTIVITIES SURVEY THE EFFECTS OF THAT ACTION?

A Marble Orchard

I. Introduction

This activity is designed for the average upper middle grade level student. It deals with the concept of weathering of rock structures and observing how various types of rocks are attacked by weathering agents. It is an open-ended inter-disciplinary activity requiring several class periods and may be studied over the whole class year, depending upon the students' interests.

An excellent place for this activity is in a cemetery close to the school. The only necessary materials are student notebooks and pencils, large sheets of newsprint or other thin paper and crayons.

II. Questions

A. Leading questions:

1. What is the origin of the word cemetery?
2. Are all cemeteries restricted by boundaries?
3. What types of boundaries are usually used?
4. Why were some cemeteries located near churches?
5. How do maps show the location of cemeteries?
6. Are all people buried when they die?

B. Initiating questions:

1. Where is a close-by cemetery?
2. What are its boundaries?
3. What family names make up the greatest percentage of people buried there?
4. Are any of these names known locally?

C. Continuing questions:

1. What type of materials are most of the tombstones made of?
2. What is the basic construction material for the oldest tombstones? For the youngest?
3. What are the differences in the amount of weathering observed in both cases?
4. For those headstones with the greatest amount of weathering, are there other common variables?

D. Questions that expand:

1. Did all of the headstones have epitaphs?
2. Were all the epitaphs of raised letters or were some of incised letters?

3. Of the two previous types of lettering, which showed more weathering effects?
4. Did some tombstones have decorations or illustrations besides an epitaph?
5. What did such illustrations attempt to show about the person buried there?

E. Evaluating questions:

1. Originally, how did you feel about cemeteries and how do you feel now?
2. What would you like to accomplish before you die?
3. If you were designing your own tombstone, what data about your life might it include?
4. What characteristics should a lasting tombstone have? GOOD

NOTE: Tombstone rubbings made with thin sheets of paper and soft crayons can provoke hours of historical and literary research.

YOU TAKE A WHILE TO GET TO "MARBLE CONCEPT". MAYBE ACTIVITY SHOULD BE LIMITED A LITTLE.

Polyethylene Bag Composting

I. Introduction

This activity is designed to show students how they can help parents use the grass clippings and organic waste to good advantage rather than throwing it away.

II. Questions

1. To lead to the activity:
 - a. Do you know what compost is?
 - b. How many of your parents discard grass cuttings, leaves, and/or shrub trimmings?
 - c. How many buy and use fertilizers and peat moss for lawn and garden?
 - d. How many buy or use manure for fertilizer?
2. To initiate the activity:
 - a. How many could bring a small bag of leaves or grass cuttings to school tomorrow?
 - b. Could someone bring a heavy duty garbage bag?
3. To continue the activity:
 - a. How many brought something to put in our compost bag?
 - b. How shall we begin?
 - c. Where shall we put it?
4. To expand the activity:
 - a. Should we add additional layers later on?
 - b. How long do you think it will take before we can use it?
5. To evaluate the activity:
 - a. If we plant seeds in our compost next spring, will they grow?
 - b. How else could we use our compost?

III. Equipment

1. Heavy duty polyethylene garbage bag.
2. Grass cuttings, leaves, etc.
3. Hydrated lime.
4. Wire fence cylinder or a hole in the ground to support bag.

IV. Procedure

1. Have students place alternate layers in garbage bag: 4 inches of cuttings, leaves, etc., sprinkle with water, then add 1/2 inch layer of lime. Layer until bag is full.
2. Additional layers will be needed from time to time to keep bag full.
3. Activity should be started in September so that by spring, it will be ready for use.

YOUR "QUESTIONS TO INITIATE" SECTION SHOULD HAVE SOME QUESTIONS DEVELOPING THE IDEAS OF DECAY, COMPOST, HUMUS, RECYCLING, ETC.
FOR EXAMPLE:

IN A FOREST, WHAT HAPPENS TO THE LEAVES THAT FALL TO THE GROUND?
WHERE DO THE TREES GET THE MATERIALS THEY NEED TO GROW? WHERE
DOES THAT MATERIAL COME FROM?

AS YOUR QUESTIONS DEVELOP, THE STUDENTS THEMSELVES SHOULD SUGGEST
ESTABLISHING A COMPOST PILE, RATHER THAN BEING TOLD TO ESTABLISH
ONE.

How Do Earthworms Change The Soil?

I. Introduction

The purpose of this 2 to 3 day activity is to have children discover the importance of earthworms to the soil. Observing how earthworms aerate the soil, help conserve water and note whether they are active in light or dark places.

II. Questions

1. To lead to activity, ask:

- a. What do earthworms do?
- b. Where do they live?
- c. Are they good or bad for the soil?

2. To initiate the activity, ask:

- a. What can we do with these 3 cans of dirt to prove our answers?
- b. How could we tell whether worms prefer light or darkness?
- c. Do worms need water?

3. To continue the activity, ask:

- a. What happened in the cans we kept in the dark, compared with the can we kept in the light?
- b. Why do you think we put one can in the dark with worms, and one without worms?
- c. What do worms seem to prefer, light or dark places?
- d. Why did we moisten the soil?
- e. Which cans seem to hold water better?
- f. Why do you think cans in the dark held the water better?

4. To expand the activity, ask:

- a. Which types of soil would worms grow better in:
 1. acid soil?
 2. basic soil?
 3. dry, wet or damp soil?
 4. soil rich in humus?

5. To evaluate the activity, ask:

- a. Why don't we see many worms on lawns during the daytime?
- b. Do worms enrich the soil?
- c. What happened to the cornmeal put in the soil?
- d. How do worms help to conserve soil?

III. Equipment

1. 3 coffee cans, same size.
2. Loam soil - enough for each can.
3. Earthworms
4. Sand
5. Cornmeal
6. Lamp
7. Other types of soil for expansion activity
8. Notebooks and pencils

IV. Procedure

After asking questions that will lead to the activity, have the 3 coffee cans available, filled $\frac{2}{3}$ full with loose soil. Earthworms should be added to 2 of the 3 cans. Then add about an inch of sand and, on top, place about $\frac{1}{2}$ inch of cornmeal. Place one of the cans with worms near a window, and a light for night. Place the other 2 cans in the dark. Have the children observe these cans each day, and write in their notebooks what happened. Add to each can, a small amount of water at room temperature each day. Then, ask questions about what they have observed for evaluation. Another day, bring in other types of soil to see which kind is better for growth of worms.

GOOD, I'VE ALWAYS LIKED WORMS!

Life In One Cubic Foot

I. Introduction

In this activity, students will observe one cubic foot of earth. The students will select a site, whether it be in the woods or a field, to study the physical environment. This activity will take from one to one and a half hours, because of site selection. Supervision will be needed in the preparation and introduction, and in the culmination at the end. It is desired that the students will see that there are many organisms in and around the earth that we take for granted. This activity can be done with students from third grade through senior high school.

II. Questions

1. To lead into the activity:
 - a. What is the soil made up of?
 - b. Why is our soil important to us?
2. To initiate the activity:
 - a. What do you think there is in the soil?
 - b. Are there any living organisms in the soil?
 - c. Can anything live under the ground?
3. To continue the activity:
 - a. List what is found in one cubic foot.
 - b. What material is in the soil besides living organisms?
 - c. What happens to an organism that dies in the soil?
 - d. Does all soil have living organisms?
 - e. Are there separate layers of soil?
 - f. Do these layers have differing characteristics?
4. To expand the activity:
 - a. How is soil formed?
 - b. Why is there life in soil?
 - c. How does the soil help us?
 - d. What happens when top soil is scraped away?
 - e. How do living and non-living organisms interact in this area?
 - f. What changes have we just made to that foot of soil?
5. To evaluate the activity:
 - a. Were they able to select a site?
 - b. Do they understand what is in the ground?
 - c. Could they determine the different items located in the cubic foot?

III. Equipment

1. Shovel or trowel
2. Small tray
3. Notebook and pencil
4. Small knife or screwdriver
5. Ruler

IV. Procedure

1. Introduce project.
2. Have students select their site.
3. Dig up their cubic foot.
 - (a) observe physical structure of soil.
 - (b) watch for living organisms or signs of their presence.
4. As they remove soil, have them place it in stages of every 4" (depth) so they can study it at various stages.
5. Observe and record what they have found.
6. When observation is completed, students are to replace the soil and attempt to return the site to the way they found it.
7. Students now are to evaluate what they have observed.

GOOD ACTIVITY

Vegetation And The Environment

Introduction

The purpose of this activity is to demonstrate how man adversely alters his environment when he eliminates vegetation.

- A. Lead to:
 - 1. In what ways do developers change our environment?
 - 2. What use does vegetation serve?
- B. Initiate:
 - 1. Does vegetation really affect the physical environment that much?
 - 2. How could we measure these effects?
- C. Continue:
 - 1. What are the various areas around the school that could be compared on the basis of vegetation?
 - 2. What variables, other than type of vegetation, should also be considered?
- D. Expand:
 - 1. Are there ways in which vegetation affects us that are not so easily measured - aesthetic, psychologically, etc.?
 - 2. How could you measure these things?
- E. Evaluate:
 - 1. What does the data indicate?
 - 2. Would these differences affect people very much?

Materials

Thermometer, sling sychrometer, umbrella, or other device for shade.

Procedure:

- 1. Divide class into teams to collect data from various areas (lawn, meadow, woods, driveway, etc.)
- 2. Students should determine the relative humidity in their areas and the temperature at different levels above the ground (shade the thermometer while measuring the temperature).

A SIMPLE, DIRECT ANALYSIS OF MICROCLIMATES.

Litter Gardens

I. Introduction

My topic is concerned with pollution-littering of the highways and byways around us. It is a simple activity that can be conducted on the school playground and then followed up in the classroom. Children hear a great deal concerning the amount of littering that is done, and how it contributes to the deterioration of the countryside. Therefore, it is essential that children build an awareness of the reasoning behind the slogans "Don't be a Litterbug", "Give a Hoot-Don't Pollute". This is my primary goal in the following activity.

II. Questions

A. To lead to the activity, ask:

1. What is litter?
2. Where does it come from?

B. To initiate the activity, ask:

1. How much litter do you think we can find around our playground?
2. What can we do to help our playground look nicer?

C. To continue the activity, ask:

1. Now what can we do with the litter after it has been gathered?
2. Can litter be classified?

D. To expand the activity, ask:

1. If we make a litter garden, will it grow?
2. What other types of gardens could we compare it to?

E. To evaluate the activity, ask:

1. What happened in the litter garden? Why?
2. What happened in the vegetable (or flower) garden? Why?
3. Which is more pleasing to the eye?
4. Which is better for the environment?

III. Equipment

A. Two sturdy liquor store boxes.

- B. Soil
- C. Seeds
- D. 31 ambitious youngsters.

IV. Procedure

- A. Send students out to collect litter around the school playground. (Limit to 10 minutes). Return to classroom.
- B. Sort litter into categories - paper, plastic, metal, glass, etc.
- C. Prepare boxes with soil.
- D. Divide class into two groups - one to plant litter, one to plant seeds.
- E. Water daily and place in a sunny location.
- F. Record findings at the end of two weeks.
- G. Draw conclusions on observations, and chart these for comparison and future reference.

YOU BEGAN LIKE MANY OTHER ACTIVITIES. BUT YOUR FINAL TWIST SHOULD LEND CONSIDERABLE SUPPORT TO THE DEVELOPMENT OF POSITIVE ATTITUDES.

A Study Of A Tree Stump

I. Introduction

This activity leads to careful observation and hypotheses formation. Recognizing trees and reading their past history from stumps can reveal much to the student about his natural environment.

II. Questions

1. To lead to the activity, ask:
 - a. Is the tree standing partially or fallen?
 - b. Is there bark on the tree?
 - c. What kind of tree was this?
 - d. In which direction did it fall?
 - e. Was it cut or was it blown over?
 - f. Is the wood moist or dry?
2. To initiate the activity, ask:
 - a. If it was cut, what tools were used?
 - b. If it fell down, what might have caused it to fall?
 - c. Was it dead or alive when it fell?
 - d. How long (relatively) has it been dead?
 - e. Did it damage any other thing by falling?
3. To continue activity, ask:
 - a. Can a nail be pushed into the wood?
 - b. How old was it when it was cut?
 - c. How can you determine the approximate age of the tree?
 - d. Are all the annual rings of the same width?
 - e. Why, or why not?
 - f. What could have caused different growth patterns?
4. To expand activity, ask:
 - a. Are there any animals living in the stump?
 - b. How can you tell?
 - c. Can you identify them?
 - d. Can you count them?
 - e. What signs of larger animals can you find?
 - f. Are there any plants growing on the stump?
 - g. Are they all green plants?
5. To evaluate activity, ask:
 - a. Have you determined the approximate age of the

- tree when it was cut or fell over?
- b. Have you collected and identified most of the animal types living in and on the tree?
 - c. Do you think there is more life on and in the tree now or when it was standing alive?
 - d. Do you think stumps and logs should be cleared from forests, or burned?
 - e. What is the ecological value of a tree stump, or fallen tree?
 - f. How long do you think it would take a tree to decay completely?
 - g. What factors might influence that rate?

III. Equipment

- | | |
|----------------------|---------------------------------------|
| 1. Measuring tape | 7. Guide to fungi, masses and lichens |
| 2. Calipers | 8. Compass |
| 3. Nail or probe | 9. Increment borer |
| 4. Tree guide (I.D.) | 10. Camera |
| 5. Collecting jars. | 11. Forceps |
| 6. Insect guide | 12. Hand lens |

IV. Procedure

1. Scout a forest for a stump or fallen tree.
2. Observe and record findings as to:
 - a. Determining direction of fall.
 - b. Species.
 - c. Effect upon immediate environment.
3. Measure growth rings:
 - a. If cut, count rings.
 - b. If cracked, use increment borer. (Demonstrate use of borer)
4. Observe and collect insect and other animal life. Describe burrows.
5. Identify animals.
6. Photograph stump, burrows and signs of decay, rings of growth.

YOUR "LEAD TO" QUESTIONS BELONG WITH "INITIATE", AND YOUR "EXPAND" QUESTIONS BELONG WITH "CONTINUE". USE THE "LEAD TO" SECTION TO INTRODUCE THE BROAD TOPICS OF THE ACTIVITY BEFORE YOU ACTUALLY TRY TO LOCATE OR UTILIZE STUMPS. USE THE "EXPAND" SECTION TO SUGGEST FURTHER ACTIVITIES ACCOMPLISHED AT A LATER DATE.

Succession In A Field

I. Introduction

Soil undergoes succession and develops into areas capable of supporting different types of plant and animal life. This activity is designed to help students understand the stages of succession which occur when land is left untilled. The types of communities which develop as succession occurs are also observed.

II. Questions

1. To lead to the activity, ask:
 - a. Do you think the environment always stays the same?
 - b. What evidence can you give to support your answer?
 - c. How can we go about proving our answers?
 - d. What would you expect to find in terms of plant and animal life in a field?
2. To initiate the activity, ask:
 - a. What kinds of plants are growing in the quadrat?
 - b. Can you identify them?
 - c. How many of each type can you find?
 - d. (Ask the same questions for animals)
3. To continue the activity, ask:
 - a. What environmental factors may contribute to and account for the growth of the plants?
 - b. What is the approximate age of the vegetation?
 - c. What types of animals are seen on the vegetation? on the ground (soil)?
4. To expand the activity, ask:
 - a. What is the tallest plant? How tall is it?
 - b. What is the shortest plant? What size is it?
 - c. Are there more insects on the plants than on the soil?
 - d. How do the plants, animals and soil depend upon each other?
5. To evaluate the activity, ask:
 - a. If the area were left undisturbed, what types of plants and animals might you expect next year? In 10 years? 50 years?

- b. What would happen if the areas were to be plowed over or burned?
- c. Can you compile a list of the various types of plants, animals on the site?
- d. Can you group or classify the plants and animals?
- e. How would factors such as sunlight, water, wind, affect the quadrat organisms?
- f. How many organisms (plant and animal types) are there? (Density)

III. Equipment

1. Field guides to plants, trees, insects, animals.
2. String
3. Measuring tape
4. 24" stakes, hammer
5. Hand lens
6. Note pad and pencil
7. Camera

IV. Procedure

1. Select an area of a field at random, by throwing an object (rock or stick) over one's shoulder.
2. Mark the rock as the center of the study plot.(quadrat)
3. Measure off an area 10 feet square.
4. Put in stakes.
5. Tie string around quadrat border.
6. Identify and count types of plants and animals in area.
7. Record types and numbers.
8. Develop diversity index.
9. Calculate density factors. $D = \frac{N}{S}$
10. Photograph procedure and study site.

ARE THERE ANY PHYSICAL FACTORS OF THE ENVIRONMENT THAT YOU WOULD LIKE TO RECORD, (TEMPERATURE AT VARIOUS LEVELS ABOVE AND BELOW GROUND, SOIL CONDITIONS, SLOPE, EXPOSURE)?

Developing A Simple Key For Identifying Common Trees

I. Introduction

This activity is designed to sharpen students' skill at observation by using structural similarities in developing a simple identification key for trees. The general procedure can be adapted for any grade level by altering the amount of detail included in the observations.

II. Questions

1. To lead to activity, ask:
 - a. As you walk through a picnic area, have you noticed that some people seem to look alike?
 - b. What are some specific features that lead you to feel this way?
 - c. Do you think that people who have similar facial features might be related?
2. To initiate the activity, ask:
 - a. As we walk through this woods, do any of these trees look alike?
 - b. What specific features leads you to think that two trees might be related?
3. To continue the activity, ask:
 - a. Which feature seems to be the easiest one to use in late spring for grouping the trees?
 - b. Does a single leaf give us enough information to separate these trees into groups?
 - c. Do all leaves attach to the branch in the same manner?
 - d. As we sketch the leaf arrangement on the branches, can we separate the trees into groups in any manner?
4. To expand the activity, ask:
 - a. Can you see some other features that might help us to further subdivide the groups?
 - b. In the winter, what features could be used to develop an identification key?
 - c. In autumn, how might we develop a means of identification?
 - d. Could you develop a key for identifying flowers?
 - e. What features would you use in your flower key?

5. To evaluate the activity, ask:
 - a. Do all of the trees fit into the groups that we have set up?
 - b. What value does a key have?

III. Equipment

1. Notebook and pencil
2. Guidebook of common trees.

IV. Procedure

1. Walk through a woodland area.
2. Sketch the arrangement of leaves on the branches.
3. Use guide book to identify common families, such as Oaks or Maples.

WHY NOT SAVE THE GUIDEBOOK FOR FUTURE ACTIVITIES? LET THE KIDS DEVELOP THEIR OWN KEYS WITH THEIR OWN NAMES AND "FAMILIES".

Living In A Cemetery

I. Introduction

My topic is concerned with an activity that could be conducted in a cemetery. It is a very simple method of identification and classification of living things within a specified area.

II. Questions

A. To lead to the activity, ask:

1. What is a living thing?
2. Can we make two broad classifications - plants and animals?

B. To initiate the activity, ask:

1. Where do we find living things?
2. Can they be different in size? How?
3. Are they dependent on each other? How?

C. To continue the activity, ask:

1. Are there likenesses in the two classifications?
List them.
2. Are there differences in the two classifications?
List them.
3. How can you record and compare discoveries?

D. To expand the activity, ask:

1. How can we classify the living organisms we have found?
2. Would our findings be the same on a different type of day - weatherwise? seasonwise?

E. To evaluate the activity, ask:

1. How effective was our study?
2. How much impact would this study have on our awareness of the environment?

III. Equipment

- A. Hula hoop, or individual handcrafted circles or squares made of oaktag to be used as frames around specified area.

B. Recording materials.

IV. Procedure

- A. Have the children select a site.
- B. Toss your oaktag "frame" or "circle" or "hula hoop" on the grass.
- C. Lie down on your stomach and observe what you see within the frame.
- D. Record what you see.
- E. Move to another site.
- F. Repeat procedure.
- G. Compare findings.
- H. Share your findings with all the members of the class.

SOUNDS LIKE A GOOD APPROACH. YOU MAY NEED ADDITIONAL QUESTIONS TO DEVELOP YOUR RECORDING PROCEDURE. WHAT TYPE OF DATA WILL YOU USE (NAMES, NUMBERS, DRAWINGS, MEASUREMENTS)?

Tangleboards

I. Introduction

This activity is planned for a class of third grade children. It could be carried out effectively at any time during the school year. Some children might even want to put tangleboards out in their own backyards or neighborhoods. In the classroom, this activity might be initiated at a time when the kids show a spontaneous interest in a creature they have observed on the playground or in their neighborhood, or in connection with a nature study unit or an environmental project. The entire activity including planning and follow-up could be carried out in several days.

II. Questions

A. To lead to the activity, ask:

1. Did you see any living creatures on your way to school today? What?
2. Are there many living creatures around our school?
3. What creatures have you seen recently?
4. Do you ever see evidence that an animal or bird or insect has been here? What "signs" do they leave?
5. What do you think are the best places to look for animals and their tracks?
6. Are there any ways we can attract living creatures?

B. To initiate the activity, ask:

1. On what surfaces do creatures leave their tracks?
2. Have you ever seen birds' footprints on snow or on the sand?
3. Can you sometimes see where a snail has crawled over the ground?
4. Could we make something to place outside to "collect" tracks? What?
5. Would you be able to bring from home a flat board or a tray? What else could you use?
6. What could you spread on your board to "collect" tracks? Flour? Sand?
7. What could you use as a bait?
8. Could you find a good spot on our playground to place your board?

C. To continue the activity, ask:

1. Can you carry your board inside very carefully so you don't mess it up?

2. Who has found something on his board?
3. Do you know what creature made the tracks?
4. Did any of you find insects or crawl creatures on your boards? What are they?
5. Where did you place your board?
6. Did some places seem to be better than others? Why?
7. Do you think that what you spread on your board seemed to make any difference?
8. Did anyone use a bait? What?
9. If we try this again, would you do anything differently? What?
10. If you have anything alive on your board, what could you do with it?

D. To expand the activity, ask:

1. Would you like to put another tangleboard out in a different place to see what happens?
2. How else could we learn about the creatures whose tracks we have seen?
3. Could we go to the library for more information?
4. Would you like to share whatever you learn with the rest of the class?
5. Would some of you like to draw pictures or write stories or poems about the creatures who visit our playground?
6. Would you like to make a terrarium with a few living creatures in it?
7. Could we set up a bird observation station?

E. To evaluate the activity, ask:

1. Did the children develop respect for the living creatures in their environment?
2. Did they learn some new facts about living things and their habits?
3. Did they show improvement in basic skills or research skills as a result of this activity?
4. Did they show enthusiasm?
5. Did they benefit from any mistakes they may have made the first time around?
6. Will they be more aware of all living creatures in their environment in the future?
7. Are they becoming more curious?

III. Equipment

The only equipment necessary for this activity would be flatboards or metal or plastic trays and flour or sand to spread over the surface. Some children might want to use something like peanut butter or seeds for bait.

IV. Procedure

The children could carry out this activity individually, or working in pairs. Some children are unable or forget to bring their equipment from home, so it might be a good idea for the teacher to have extra materials or to ask for volunteers to share. After the preliminary group discussion and planning, the children should have no difficulty understanding what to do. They should then be ready to select their spots on the playground. It is preferable to leave the tangleboards out overnight, although there is a risk that they will be disturbed by other kids playing on the playground after school hours. For this reason, some children might prefer to place their boards in their own backyards, which, of course, presents the problem of returning them to school unscathed. If any learning is to result from this activity, the group examinations of the boards and the follow-up discussion are very important. Since most kids are especially interested in nature study, there should be enthusiasm for the expansion activities as well.

GOOD ACTIVITY.

Where Does The Energy Go?

I. Introduction

My topic is concerned with energy. Basically, we know that energy is the ability to move other matter or to produce a chemical change in other matter. This activity deals with the concept that when energy changes from one form to another, the total amount of energy remains unchanged.

II. Questions

A. To lead to the activity, ask:

1. Where does all energy come from?
2. What can energy help us do?

B. To initiate the activity, ask:

1. Where do we as individuals get our energy?
2. What kinds of energy are there?

C. To continue the activity, ask:

1. What are the four food groups?
2. What kinds of energy are gained from each?
3. What happens when a match is struck?
4. What kinds of energy are released from a burning candle?

D. To expand the activity, ask:

1. How does energy change from one form to another?
2. What would happen if our primary source of energy (sun) were to be taken away from us?

E. To evaluate the activity, ask:

THESE QUESTIONS SHOULD HELP YOU DETERMINE TO OVERALL IMPACT OF YOUR ACTIVITY.

III. Equipment

- A. Matches
- B. Candle
- C. Dry cell battery
- D. Electrical toy
- E. Pictures to illustrate food groups.
- F. Pop corn popper.

IV. Procedure

- A. Introduce food groups and stress importance of the energy gained from each.
- B. Strike a match and use a candle to show stored energy, released energy, and heat energy.
- C. Use a dry cell battery to run an electrical toy.
- D. Pop corn in the popper.
- E. Have children write stories about observations.

THE LAW OF CONSERVATION OF ENERGY IS A GOOD TOPIC. READING YOUR QUESTIONS, HOWEVER, I DON'T FEEL I GOT VERY CLOSE TO AN ANALYSIS OF THE CONSERVATION IDEA. POSSIBLY SOME QUESTIONS CONCERNING THE OVERALL FLOW OF ENERGY WOULD HELP. COULD YOU TAKE ONE EXISTENT ENERGY FORM AND FOLLOW ITS PATH THROUGH THE FUTURE AS WELL AS FOLLOW IT BACKWARD TO ITS SOURCE?

APPENDIX

PAGE NO.

The USOE National Diffusion Network.....	188
Environmental Studies Activities.....	189
Activity Suggestions For Studying An Urban Block.....	191

The USOE National Diffusion Network

During 1975-76, Project KARE is operating as a Developer/Demonstrator Project in the USOE National Diffusion Network. Funding is provided directly from the United States Office of Education (USOE), Washington, D.C., under the Elementary and Secondary Education Act (ESEA) of 1965, Title III, Section 306.

The National Diffusion Network is designed to enhance opportunities for sharing educational success. Components of the network are State Facilitators (SFs), Developer/Demonstrators (D/Ds), and Adoption/Adaption Schools (Adopters). The prime objective of the network is to provide avenues for SFs, D/Ds and Adopters to interrelate such that educational expertise of D/Ds is transmitted to the adopters. That which is transmitted might consist of processes, materials, or skills.

Project KARE, beginning in 1971, developed a process for strengthening environmental studies in local schools. Learning materials including "curriculum activities guides" were produced. Skills for implementing the KARE Approach are being achieved by teachers, administrators, students, and community leaders who participate in KARE training workshops. All project activities were carefully evaluated by an independent evaluator, ERANDA, Inc., of West Chester, Pennsylvania. During Spring, 1975, Project KARE participated in two national procedures which assay effectiveness and export-ability of innovative educational programs. In June, the project was "validated" by the Pennsylvania Department of Education and USOE as a successful, exemplary educational practice worthy of widespread dissemination. Concurrently, Project KARE was "certified" by the Joint Dissemination Review Panel of USOE and the National Institute of Education as an educationally-sound innovation verified by accepted evaluation procedures.

Accordingly, Project KARE was selected and funded by USOE as a Developer/Demonstrator Project. As such, the project is required to provide a majority of services to local education agencies outside Pennsylvania. In addition to conducting training workshops, the project is producing and disseminating various curricular and awareness materials, and maintaining demonstration schools for on-site visitations by potential Adopter schools.

The role of State Facilitators is to assist Adopter schools in determining educational needs; to disseminate relevant information to local schools about successful programs in the network; and to monitor the installation, operation, and assessment of successful adoptions. Thus, the State Facilitator provides assistance to match potential Adopter schools with Developer/Demonstrators. In Pennsylvania, Project RISE, King of Prussia, serves as State Facilitator.

Environmental Studies Activities

When designing environmental studies activities, one must take into account the level of experience and understanding of the participants. Accordingly, three levels of activities have been developed.

Awareness activities allow participants to make observations and draw conclusions about real things in their environment. Transitional activities deal with concern and/or interests that have grown out of awareness activities. These activities allow groups to focus on problems which have been defined and which are successfully dealt-with within the existing school time structure. Transitional activities lead to operational activities, which consist of complex problem investigations that may not be fully completed during a formal course of study.

Awareness and transitional activities are presented in a question-oriented format. This approach was chosen because it allows students to respond as individuals; because it diminishes the authority-figure role of the teacher; and because it implies that there are few-if any-ultimates which can be applied to real world situations. By using this format, we are not implying that anyone can pick up a printed activity, ask the sample questions and expect the specific activity to magically follow. Individual teachers may have to formulate their own questions to guide their students. No special format is used for operational activities. Generally, a process is described and then the participants become involved with an environmental situation using the process. A simulation developed by KARE, REPS (Realistic Environmental Problem Simulation), represents one such process.

Five categories of questions are used to involve the co-learners in activities. Questions which lead to the activities are intended to direct thinking toward a general area of investigation. Those to initiate require action if they are to be answered. Questions to continue help to give the problem more definition. Questions to expand allow branching-off points and suggest areas of further investigation. Those which are used to evaluate help the co-learners to assess successes and failures and to determine progress.

Activities should be developed with process skills in mind. The purpose of a process-oriented development is to set the basis for student-initiated activities. Students will be better able to deal with investigations of their own design if they have had previous experience with process skills.

The process skills are divided into levels which parallel those

of the activities. They are as follows:

1. Awareness level
 - a. observing
 - b. categorizing
 - c. comparing
 - d. measuring
 - e. inferring
 - f. questioning
2. Transitional level
 - a. predicting
 - b. data collection
 - c. data processing
 - d. data evaluation
 - e. formulation of hypotheses
3. Operational level
 - a. problem recognition and definition
 - b. problem analysis
 - c. data processing
 - d. data evaluation
 - e. data utilization

Reference: Sparks, P.M., Sexton, A.D., et al, A Curriculum Activities Guide to Solid Waste and Environmental Studies, Institute for Environmental Education, Cleveland, Ohio. 1973

Activity Suggestions For Studying
An Urban Block

75 August 5

Interdisciplinary Environmental Studies Workshop
(Chester County)

GROUP I

1. Draw a picture of the street
2. Count the sets of windows in each house
3. Write the addresses of odd and even
4. Find the different shapes and what they represent
5. Classify people in streets
6. Number of sets of windows
7. Diversity of living things
8. Write a story about the people in a house
9. Write a story on the appearance of neighborhood
10. A story on feelings about living
11. Put house numbers on curb so they can be seen
12. Survey number of residents in each home
13. Kind of trash found in street
14. Write a petition for stop sign
15. Make a study of traffic
16. Safety in home living - Map of home
17. Comparison of building materials
18. Find occupations of people in home
19. Survey ethnic groups
20. Find the nearest safe play area
21. Petition for fire hydrant sprinkler

GROUP II

1. Knock on door and write last name - ethnic inventory
2. How many people in block
 - a. pets
 - b. average of people
 - c. age group
3. Occupations
4. Working mothers (#)
5. Each child has to devise an activity to occupy a pre-schooler
6. Count the windows
7. Architecture
8. Determine the area of front door
9. Number and types of trees
10. Add the house numbers and get a total
11. Check different roofs - slate, etc.
12. Count the panes
13. Age of people in each family and entire block
14. Give him \$25 and what would he buy (food)

15. Give him \$25 and what would he do for block improvement
16. Survey of toys
17. Where do they shop
18. How many have cars
19. Does mother cook meals
20. I was walking down Clem. St. when --
oral - group, taped, written, make-believe, real life
21. History of the block
22. Rent - price
23. Which side of street is more eroded
24. What type of steps do they have
25. Are there fire escapes
26. Do they have dirt cellars or cement
27. What are their most serious problems (in each house)
28. Salary - how much do they make - income

GROUP III

MATH

1. Read St. numbers - cardinal and ordinal numbers
2. Odd and even - height of building
3. Count windows, doors, - similarities and differences of houses
4. Dimensions of things on house, street, sidewalks
5. Count people
6. Population count - people, animals/census survey population
7. "Old counting trick" on cars, transportation
8. Count bricks
9. No. of houses needing repairs
10. Parking meters
11. Abandoned houses vs. filled houses
12. Residential vs. non-residential
13. Mapping
14. Land use

READING

1. Spelling street names
2. Address envelopes
3. Language spoken- English-a first language, a second, not used.
4. Written house descriptions - photography
5. Write weather report

SOCIAL STUDIES

1. Types of transportation
2. Repairs needed
3. Stop, red light, fire hydrant
4. Nationality polls
5. Economic environment on block
6. Signs of wildlife

7. Types of vegetation - weed population
8. Community services
9. Recreation
10. Housing materials
11. Window sill rubbing
12. Look for safety violations
13. Brick laying
14. Repair parts of houses
15. Go through garbage